ScottishPower Renewables

# Elliotts Hill & Wolf Bog Windfarm Repowering

## Environmental Impact Assessment Scoping Report

June 2024

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# Abbreviations

| | |
|---|---|
| **AM** | Amplitude Modulation |
| **AESLQ** | Assessment of Effects on Special Landscape Qualities |
| **AOD** | Above ordnance datum |
| **AONB** | Area of Outstanding Natural Beauty |
| **ASL** | Above Sea Level |
| **ASSI** | Areas of Special Scientific Interest |
| **BCT** | Bat Conservation Trust |
| **BoCCNI** | Birds of Conservation Concern in Northern Ireland |
| **BS** | British Standard |
| **BTO** | British Trust for Ornithology |
| **c.** | circa |
| **CBA** | carbon balance assessment |
| **CEDaR** | Centre for Environmental Data and Recording |
| **CIEEM** | Chartered Institute for Ecology and Environmental Management |
| **CNO** | Control of Noise Order |
| **CRM** | collision risk modelling |
| **CRTN** | Calculation of Noise from Road Traffic |
| **DAERA** | Department of Agriculture, Environment and Rural Affairs |
| **DEFRA** | Department of Environment, Food & Rural Affairs |
| **DfC** | Department for Communities |
| **DfI** | Department for Infrastructure |
| **DMRB** | Design Manual for Roads and Bridges |
| **EcIA** | ecological impact assessment |

| | |
|---|---|
| **ECoW** | Environmental Clerk of Works |
| **e.g.** | example |
| **EIA** | environmental impact assessment |
| **ES** | Environmental Statement |
| **ETSU** | Energy Technology Support Unit |
| **EU** | European Union |
| **GLVIA** | Guidelines for Landscape and Visual Impact Assessment |
| **GPP** | Guidance for Pollution Prevention |
| **GSNI** | Geological Survey of Northern Ireland |
| **GWDTE** | groundwater dependent terrestrial ecosystems |
| **ha** | hectare |
| **HED** | Historic Environment Division |
| **HRA** | Habitats Regulations Appraisal |
| **IEF** | Important Ecological Feature |
| **IEMA** | Institute of Environmental Management and Assessment |
| **IRBBP** | Irish Rare Breeding Birds Panel |
| **JNCC** | Joint Nature Conservation Committee |
| **LCT** | Landscape Character Type |
| **LDP** | Local Development Plan |
| **LDP-PS** | Local Development Plan – Plan Strategy |
| **LWS** | Local Wildlife Site |
| **LDA-PS** | Local Development Plan - Plan Strategy |
| **LPA** | Local Planning Authority |
| **LVIA** | landscape and visual impact assessment |
| **m** | meter |

| | |
|---|---|
| **M&EABC** | Mid & East Antrim Borough Council |
| **MBBS** | moorland breeding bird survey |
| **MW** | megawatt |
| **NALA** | Night-time Aviation Lighting Assessment |
| **NBN** | National Biodiversity Network |
| **NI** | Northern Ireland |
| **NIE** | Northern Ireland Electricity |
| **NIEA** | Northern Ireland Environment Agency |
| **NISMR** | Northern Ireland Sites and Monuments Records |
| **no.** | number |
| **NSR** | noise-sensitive receptor |
| **NVQ** | National Vocational Qualification |
| **NVC** | National Vegetation Classification |
| **PfG** | Programme for Government |
| **PPS** | Planning Policy Statement |
| **PRONI** | Public Records Office Northern Ireland |
| **PWS** | private water supply |
| **RCP** | Representative Concentration Pathway |
| **RDS** | Regional Development Strategy |
| **RSPB** | Royal Society for the Protection of Birds |
| **RVAA** | Residential Visual Amenity Assessment |
| **SAC** | Special Areas of Conservation |
| **SLR** | single-lens reflex |
| **SNH** | Scottish Natural Heritage |
| **SPA** | Special Protected Areas |

| | |
|---|---|
| **SPR** | Scottish Power Renewables |
| **SPPS** | Strategic Planning Policy Statement |
| **SSSI** | Site of Special Scientific Interest |
| **SuDS** | sustainable drainage design |
| **UK** | United Kingdom |
| **VP** | vantage point |
| **WFD** | Water Framework Directive |
| **ZTV** | zone of theoretical visibility |

# 1. Introduction

## 1.1. Overview

ScottishPower Renewables (UK) Limited (hereafter referred to as 'the Applicant') intend to submit a planning application to repower their currently operational Elliots Hill and Wolf Bog Windfarms, located in County Antrim, Northern Ireland (**Figure 1.1**).

The repowering of a windfarm involves the removal of existing wind turbines from a site and replacing these with new, often fewer, and more efficient turbines. Elliots Hill Windfarm and Wolf Bog Windfarm combined, currently produce up to 15 megawatts (MW) of green energy from 15 turbines. The Applicants proposed repowering would involve combining the existing windfarm boundaries and replacing the 15 existing turbines with up to five new turbines, with an installed capacity of circa (c.) 23 MW, hereafter referred to as the 'proposed Development'.

Based on the potential repower installed capacity and what is currently known about the onsite environmental and technical constraints, an application for planning permission will be under the provisions of The Planning Act (Northern Ireland) 2011, and be an environmental impact assessment (EIA) development under Schedule 2 of The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 ('the EIA Regulations'). An EIA for the proposed Development is therefore required. This document sets out the details of initial scoping undertaken as part of the EIA. It marks an early stage in the EIA and development process, aimed at ensuring that environmental considerations are fully embedded within the design and decision-making for the proposed Development. In addition, the Applicant seeks to use this Scoping Report to initiate formal engagement with Mid and East Antrim Borough Council (M&EABC, the Planning Authority) and statutory consultees, and to request a Scoping Opinion in accordance with the EIA Regulations. The Scoping Report has been prepared by Natural Power with specialist input from JUNO Planning and Environmental (policy); Avian Ecology (ornithology); Hoare Lea (acoustics); Gahan and Long (archaeology and cultural heritage); and BiGGAR Economics (socio-economics and tourism).

## 1.2. The Applicant

The Applicant, ScottishPower Renewables (UK) Limited (SPR), is part of the ScottishPower group of companies operating in the UK under the Iberdrola Group, one of the world's largest integrated utility companies and a world leader in wind energy.

ScottishPower now only produces 100% green electricity – focusing on wind energy, smart grids and driving the change to a cleaner, electric future. The company has committed to investing over £18 million every working day to make this happen and is committed to speeding up the transition to cleaner electric transport and improving air quality to deliver a better future, quicker for everyone.

SPR is at the forefront of the development of the renewables industry through pioneering ideas, forward thinking and outstanding innovation, and already has over 40 operational windfarms managed from its world-leading Control Centre at Whitelee Windfarm, near Glasgow – where Iberdrola's Saint Brieuc Windfarm in France and Wikinger Windfarm in Germany are also monitored from.

SPR stands as a distinguished innovator, industry leader, and environmental investor. As one of the largest privately funded peatland restoration entities in the UK, SPR has successfully restored over 1,000 hectares (ha) of peatland, with the capacity to sequester approximately 3.6 million tonnes of carbon dioxide. Additionally, SPR has pioneered two groundbreaking

peatland restoration techniques, 'ground smoothing' and 'wave damming,' which have now become industry standards.

SPR is also on the cusp of full circle moments as some of its oldest windfarms approach the end of their operational lifespan. The legacy those projects have left goes way beyond the power they've generated over the years and SPR has the opportunity to do so much more with them through life extension or repowering.

Repowering in particular not only allows SPR to take advantage of new technologies and therefore increased efficiency, it also enables increased electricity generation and therefore increased security of supply. It can create jobs and supply chain opportunities, unlocks more community benefit funding and further investment in ecology and the local environment. Old assets can also become sustainable resources for research and training, recycling and restoration.

## 1.3. The Existing Operational Windfarms

The operational Elliots Hill and Wolf Bog Windfarms are located adjacent to one another, c.7 km to the northwest of Ballyclare and c.10 km south east of Ballymena. Elliots Hill Windfarm can be accessed from the Tildarg Road (grid reference 722236, 895804[1]) while Wolf Bog Windfarm can be accessed from the B94, Collin Road (grid reference 723874, 897075) (**Figure 1.2)**.

Elliots Hill Windfarm was constructed in 1995 and Wolf Bog Windfarm in 2008. Both have been operational for over 30 years and 17 years respectively and both hold consent in perpetuity. There are therefore no conditions attached to their operational planning consents that require discharge prior to decommissioning of the turbines.

The boundary of both existing windfarms is shown on **Figure 1.2**. Turbine details for each of the existing windfarms are provided in **Table 1.1**. Associated infrastructure for operations includes site access tracks; a control building; buried cabling connecting the turbines to two substations (one for each windfarm); and an overhead electrical power line connecting the substations to the grid.

***Table 1.1 – Elliots Hill and Wolf Bog Windfarms - Turbine Details***

| | Turbine Number & Type | Tip Height (meters (m) | Hub Height (m) | Rotor Diameter (m) | Megawatts |
|---|---|---|---|---|---|
| Elliots Hill Windfarm | 10 Vestas | 60 | 40.5 | 39 | 5 MW |
| Wolf Bog Windfarm | 5 Vestas | 96 | 70.0 | 52 | 10 MW |

## 1.4. Scoping Report Structure

This report has been structured to align with the following aims of the EIA scoping process (see also **Table 1.2)**:

- Describe the context of the proposed Development;
- Identify the likely significant environmental effects to be further assessed during the EIA;
- Set out the proposed methodologies for assessing these effects;

[1] *The IRENET95 / Irish Transverse Mercator (ESPG:2157) coordinate referencing system has been used throughout this report.*

- Highlight any topics proposed to be scoped in or out of further assessment; and
- Invite feedback from statutory bodies and stakeholders to inform the EIA process.

***Table 1.2 – Scoping Report Structure and Content Summary***

| Chapter | Content Summary |
|---|---|
| 1: Introduction | Background context to the proposed Development, the Applicant, the existing operational windfarms, and this Scoping Report. |
| 2: Proposed Development | Outline of the proposed Development details considered in scoping. |
| 3: Approach to EIA | Summary of the EIA process. |
| 4: Legislative and Policy Context | Overview of the legislation and policy pertinent to the layout design and EIA of the proposed Development. |
| 5 – 11: Scoping Assessments | Scoping of environmental topics (ecology, ornithology, geology, hydrology and hydrogeology, landscape and visual amenity, archaeology and cultural heritage, noise and material assets). For each topic, the baseline and key sensitivities are outlined; potential effects identified and either scoped in or out for further assessment depending on likely significance; proposed methodology for further assessment during the EIA; a summary; and questions for consultees to consider. |
| 12: Other Considerations | Consideration of other key aspects and technical studies, such as shadow flicker, typically required to inform layout design and EIA. |
| 13: Environmental Statement Structure | Outline of the Environmental Statement (ES) table of contents. |
| 14: Summary | - |
| References | - |
| Figures | - |

# 2. Proposed Development

## 2.1. Overview

The proposed Development would be within the existing windfarm areas with a boundary encompassing c.173 ha (**Figure 2.1)**. The proposed Development would continue to produce clean, renewable electricity on the Site. This would involve removing the existing 15 wind turbines at Elliots Hill and Wolf Bog Windfarms and replacing them with up to five modern turbines, each reaching a maximum blade tip height of up to 150 m. The total installed capacity of the repowered site would be c.23 MW, increasing the renewable energy output compared to the existing configuration.

Key elements of the proposed Development include:

- Decommissioning the 15 existing turbines;
- Installation of up to five new wind turbines (including foundations, crane pad and underground cabling);
- Construction of upgraded or new onsite access tracks;

- Potential turbine delivery route and site entrance upgrade works (subject to abnormal indivisible load / swept path analysis; stakeholder consultation; and entrance design);
- Provision of a temporary construction compound for use during the decommissioning and construction phases;
- Construction of an onsite substation; and
- Implementation of site reinstatement and restoration works following the decommissioning and construction activities.

## 2.2. Indicative Layout Design

### 2.2.1. Wind Turbines

As an initial step, repowering feasibility studies were undertaken by the Applicant in 2023 (Envams Ltd, June 2023) and included the identification of potential locations for new turbine placement. These indicative turbine locations are shown in **Figure 2.1** and summary details provided in **Table 2.1**. The selection of these turbine locations was guided by a range of preliminary environmental considerations identified, including:

- Responding sensitively to landscape and visual constraints, particularly in relation to nearby residential properties and the adjacent Antrim Coast and Glens Area of Outstanding Natural Beauty (AONB);
- Integrating with nearby consented windfarm turbines, such as Castlegore and Whappstown, maintaining appropriate separation distances and a coherent visual relationship;
- Considering the scale of other consented windfarms in the area, in combination with minimising dominance against Big Collin, the site size and maintaining the appropriate separation distances; and
- Avoiding technical constraints such as steep slopes, watercourses, and overhead lines.

***Table 2.1 – Summary of Proposed Development Turbines***

| | |
|---|---|
| **Number of turbines** | Up to five |
| **Micrositing allowance** | 50 m |
| **Height of turbines to blade tip** | Up to 150 m |
| **Type of turbine** | Three bladed, horizontal axis |
| **Total windfarm generation capacity** | c.23 MW |

Siting of the new turbines and the associated infrastructure layout for the proposed Development will be further refined through the EIA process to minimise environmental effects, taking account of detailed baseline studies, consultee feedback, and ongoing design development. The final design will then be assessed and reported within the ES that will accompany the planning application for the proposed Development.

### 2.2.2. Access and Access Tracks

The turbines would be delivered to a nearby port facility with appropriate handling facilities (at the time of writing, ports of entry being considered are the Port of Larne and/or Belfast Harbour). Based on an abnormal indivisible load route survey of preliminary route options for repowering completed in 2023 (Pell Frischmann, 2023), the turbine components would then be transported to the Site using the existing road network, utilising trunk and major roads as far as possible.

Onsite access tracks would be required to provide access from the public roads and between turbines, the temporary construction compound, operation building and substation. Where possible and to minimise environmental effects, the existing access tracks within the Site would be reused and upgraded as appropriate. New access tracks, where required, would be constructed of a graded stone and width of c.5 m, with increase at bends / corners or as appropriate for the ground conditions.

Further detailed assessment (abnormal indivisible load) and proposed Development layout design in conjunction with stakeholder consultation will be undertaken during the EIA to avoid potentially significant environmental effects (further details provided in **Section 11**).

### 2.2.3. Substation and Grid Connection

Underground cabling, laid where possible alongside the access tracks, would link the turbine transformers to the existing control building and substation area. Each turbine transformer would be located either within the turbine nacelle, within the base of the tower or in a small enclosure at the base of the turbine.

A substation would be required as part of the proposed Development and would be sited appropriately, likely in the same location as the existing substations, and designed to the standard required by Northern Ireland Electricity (NIE) Networks for the accommodation of substation equipment.

## 2.3. Decommissioning and Construction Activities

Decommissioning of the existing Elliots Hill and Wolf Bog Windfarms and construction of the proposed Development would involve:

- Clearance of vegetation around existing tracks and crane hardstanding;
- Upgrade of existing tracks and the Site entrance for use by decommissioning and construction vehicles, where required;
- Construction of a temporary construction compound;
- Decommissioning and dismantling of the existing turbines and substations:
- Removal of the turbine components from the Site by heavy goods vehicles (HGV) or possibly abnormal loads if required for resale;
- Cutting and removal of turbine and transformer bases to c.1 m below the surface and backfilling with suitable topsoil, generated from construction activities elsewhere on the Site;
- Retention of hardstanding and access track areas not required for reuse, in order to avoid potential environmental impacts associated with their removal;
- Responsible disposal of decommissioning waste, in full compliance with the applicable waste management regulations in force at the time;

- New access track construction;
- Excavation and construction of turbine foundations and hardstanding;
- New substation construction;
- Cable installation and electrical works;
- Turbine delivery and erection;
- Turbine commissioning; and
- Site restoration.

### 2.3.1. Indicative Programme

It is expected that construction phase will run in parallel with the decommissioning of the existing windfarms and the overall programme would be c.18 months.

## 2.4. Future Decommissioning of the Proposed Development

The life expectancy of the repowered windfarm would be 40 years. Future decommissioning would therefore be undertaken and would be broadly similar to that outlined in **Section 2.3.1**. However, due to the reduced number of turbines, the potential environmental effects associated with such decommissioning are expected to be less significant than those resulting from the combined decommissioning and construction works described above. As such, the combined works are considered to represent the worst-case scenario for the purposes of the EIA.

# 3. Approach to EIA

EIA is a statutory procedure which draws together, in a systematic way, an assessment of the likely significant environmental effects arising from a development. In the case of the proposed Development, it is a requirement under The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 (as amended).

As the process has numerous steps (outlined further below), it allows for the opportunity to 'design out' or avoid significant adverse environmental effects through the design evolution of the proposed Development.

An iterative design approach is already being undertaken for the proposed Development and will continue to be adopted throughout the EIA process. The iterative design approach allows for a design that would work well for both the local environment and environmental resources within the area, as well as being an economically viable repower.

Previous data collected from the existing operational Elliots Hill and Wolf Bog Windfarms and studies completed to date for the proposed Development, will be used to inform the EIA. The Applicant has a comprehensive understanding of the Site and the local vicinity from existing operations and has completed a feasibility study and preliminary environmental constraints analysis. This has allowed for the design identified within the Scoping Report to have 'designed out' some potential impacts to the environment already.

Consultees are requested to respond where possible, to scope in those features and topics that are likely to experience a significant impact and allowing others to be scoped out. In doing so the EIA will be focussed on key effects.

The impact assessment will determine what the effect, either directly or indirectly, would be from the proposed Development by comparing the baseline conditions with the conditions that would prevail should the proposed Development be constructed and operated. The environmental effects of the proposed Development will be predicted in relation to environmental receptors (e.g. people, built resources and natural resources).

A distinction will be made in the assessments between impacts and effects, where:

- Impacts are defined as the predicted change to the baseline environment attributable to the proposed Development; and
- Effects are the consequence of impacts on environmental resources or receptors.

## 3.1. What Will the EIA Assess?

The EIA will assess the decommissioning of both the existing Elliots Hill and Wolf Bog Windfarms, and the construction, operation and future decommissioning of the Elliotts Hill & Wolf Bog Windfarm Repowering (see **Chapter 2** for further details).

Impacts from decommissioning are typically similar to the construction phase effects of a windfarm development. In the case of the proposed Development, decommissioning of the existing operational windfarms will overlap, at least in part, with the construction of the proposed Development. Furthermore, this decommissioning would involve removal of 15 existing turbines, while any future decommissioning of the Elliotts Hill & Wolf Bog Windfarm Repowering in c.40 years would be of fewer (five) turbines. Such an overlap is considered to represent a reasonable worst-case scenario in terms of potential environmental impact and therefore provides a more conservative basis for assessment.

The geographical coverage of the EIA will take account of the following:

- The physical extent of the proposed works;
- The nature of the baseline environment and the manner in which effects are propagated; and
- National and Local planning and policy context for the proposed Development.

As the existing Elliots Hill and Wolf Bog Windfarms have been in operation for over 30 and 17 years respectively, the baseline scenario for the EIA is not that of an undisturbed greenfield site. The baseline includes the land use conditions at the current time. This incorporates all existing site infrastructure, access tracks, hardstanding, cables, substations, as well as the existing 15 wind turbines and foundations. The assessments therefore use a “with windfarm” scenario as the current land use baseline.

Collection of environmental baseline data for this proposed Development is ongoing, and the EIA team will ensure that sufficient data is obtained to enable a robust assessment, appropriate to the nature and scale of the proposed Development. The extent of the baseline assessment will be determined using both professional judgement and industry best practice and guidance. It will consist of desk based studies, consultation, field survey and monitoring.

The sensitivity of the baseline conditions will then be assessed in line with best practice guidance, legislation, statutory designations and/or professional judgement. Each EIA discipline will specify their own appropriate sensitivity criteria that will be applied during the EIA. In general, the criteria tend to define sensitivities from very high to negligible for further consideration during determination of significance.

## 3.2. Prediction of Impacts and Evaluation of Effects

The prediction of impacts examines the change to the baseline environment that could result from the construction and operation of the proposed Development. To guide the evaluation of effects, the effects will be classified into one or more of the following:

- Positive effects that have a beneficial influence, negative effects that have an adverse influence;
- Temporary effects that persist for a limited period only, for example, due to particular construction activities;
- Permanent effects that result from an irreversible change to the baseline environment or which persist for the foreseeable future;
- Direct effects that arise from activities that form an integral part of the proposed Development;
- Indirect effects that arise from activities not explicitly forming part of the proposed Development;
- Secondary effects that arise as a result of an initial effect of the proposed Development; and
- Cumulative effects that arise from the combination of different impacts at a specific location, the recurrence of impacts of the same type at different locations, the interaction of different impacts over time, or the interaction of impacts arising from the proposed Development in conjunction with other development projects.

General criteria for assessing the magnitude of an effect are presented in **Table 3.1**. Each EIA discipline will apply their own appropriate magnitude of effects criteria during the EIA, with the details documented in the ES.

***Table 3:1 – General Criteria for Determining Magnitude of Effect***

| Magnitude | Definition |
|---|---|
| **High** | Total loss or major alteration to key elements/features of the baseline conditions. |
| **Medium** | Partial loss or alteration to one or more key elements/features of the baseline conditions. |
| **Low** | Minor shift away from the baseline conditions. |
| **Negligible** | Barely discernible change from baseline conditions. |

### 3.2.1. Mitigation of Environmental Effects

Where the EIA identifies likely significant adverse environmental effects, mitigation measures will be proposed in order to "*avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment*" (EIA Regulations). The mitigation measures may be embedded in the design or compensatory. In addition, enhancement measures may be incorporated into design of the proposed Development to maximise environmental benefits.

### 3.2.2. Residual Effects

The significance of residual effects will then be determined by correlating the magnitude of the change (or impact) arising from the proposed Development with the sensitivity of the particular attribute under consideration, in combination with the compensatory (and enhancement) mitigation measures.

### 3.2.3. Significance

The sensitivity of the receptor and the magnitude of the predicted effect will be used as a guide, in addition to professional judgement, to predict the significance of the likely effects. **Table 3.2** outlines general criteria used for determining significance. Effects predicted to be of major or moderate significance (as highlighted in **Table 3.2**) are considered to be significant in the context of the EIA Regulations.

***Table 3.2 – General Criteria for Determining Significance of Effect***

| Magnitude of Effect | Sensitivity of Receptor | | | | |
|---|---|---|---|---|---|
| | **Very High** | **High** | **Medium** | **Low** | **Negligible** |
| **High** | Major | Major | Moderate | Moderate | Minor |
| **Medium** | Major | Moderate | Moderate | Minor | Negligible |
| **Low** | Moderate | Moderate | Minor | Negligible | Negligible |
| **Negligible** | Minor | Minor | Negligible | Negligible | Negligible |

## 3.3. Consultation

The Applicant considers consultation with statutory, non-statutory consultees and local communities as an integral part of the iterative EIA process and recognises the benefits in carrying out early consultation with all relevant parties. Consultation with statutory and non-statutory consultees is underway and will progress with the circulation of this Scoping Report and will continue for the duration of the EIA process in accordance with the requirements of the Planning Authority.

Additionally, the Applicant is keen to engage with local communities close to the proposed Development to gather their views, so these can, where possible, inform the design process and comply with the requirements of the Planning Act (Northern Ireland) 2011. The views of local communities will be continually sought throughout the EIA process and there will be other opportunities for key stakeholders and community members to share their views on the proposed Development as it progresses throughout the EIA and consenting process.

# 4. Legislative and Policy Context

This section outlines the key legislation and policy documents of relevance to the proposed Development that will be considered throughout the EIA.

## 4.1. Legislative Context

### 4.1.1. Statutory Requirements for EIA

The EIA process will be undertaken in accordance with the requirements of:

- **The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 (as amended)**
  These regulations transpose the EIA Directive (2011/92/EU as amended by 2014/52/EU) into Northern Ireland law. They require the competent authority to undertake an EIA of certain public and private projects likely to have significant environmental effects on the environment.

  The proposed Development is classified as a 'Schedule 2 development' under these regulations, thereby requiring EIA.

- **The Planning Act (Northern Ireland) 2011**
  This Act governs the planning system in Northern Ireland and outlines the framework for the preparation, submission, and determination of planning applications, including those requiring EIA.

### 4.1.2. Nature Conservation and Biodiversity

Key legislation for protecting ecological features includes:

- **The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)**
  Implements the EU Habitats Directive and Birds Directive. Developments likely to affect National Site Network sites (formerly, Natura 2000 sites) (Special Areas of Conservation (SAC) and Special Protected Areas (SPA) require a Habitats Regulations Appraisal (HRA).

- **Wildlife (Northern Ireland) Order 1985 (as amended)**
  Provides protection for wildlife and their habitats, including species that may be affected by the proposed Development.

- **The Environment (Northern Ireland) Order 2002**
  Establishes a framework for environmental protection, including regulation of emissions and waste.

### 4.1.3. Water and Land

Key legislation for protecting hydrology and geology includes:

- **Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2017**
  Ensures the protection and sustainable use of water bodies potentially affected by the proposed Development.

- **Groundwater Regulations (Northern Ireland) 2009**
  Controls activities that could lead to groundwater pollution, e.g. from turbine foundation works or drainage construction.

### 4.1.4. Cultural Heritage and Landscape

Key legislation for protecting cultural heritage and landscape includes:

- **The Historic Monuments and Archaeological Objects (Northern Ireland) Order 1995**
  Provides for the protection of archaeological and historic sites, which must be considered in site selection and turbine layout.
- **The Planning (Listed Buildings) Regulations (Northern Ireland) 2015**
  Regulates developments near listed buildings and within conservation areas.

### 4.1.5. Other Relevant Legislation

- **Noise Act 1996 and Environmental Noise Regulations (Northern Ireland) 2006**
  Relevant to assessing and mitigating noise impacts during decommissioning the existing operational windfarms and the construction and operation of the repower windfarm.
- **Air Quality Standards Regulations (Northern Ireland) 2010**
  Ensures that the proposed Development does not compromise air quality standards.
- **Climate Change Act 2008 (as amended)**
  Supports low-carbon energy development, such as the proposed Development and sets legally binding emissions targets which a development may contribute to.

## 4.2. Policy Context

### 4.2.1. Northern Ireland Local Development Plan Policy Context

Section 45 of the Planning Act (Northern Ireland) 2011 ("the Planning Act (NI) 2011") states:

"*45.-(1) Subject to this Part and section 91(2), where an application is made for planning permission, the council or, as the case may be, the Department, in dealing with the application, must have regard to the local development plan, so far as material to the application, and to any other material considerations….."*

As per section 6(4) of the Planning Act (N I) 2011, planning decisions must be made in accordance the local development plan unless material considerations indicate otherwise. Therefore, all decisions must be taken in accordance with the policy provisions of the relevant Local Development Plan ('LDP'), unless material considerations indicate otherwise. In this legislative context, regard must be had to the M&EABC Local Development Plan - Plan Strategy (LDP-PS). The LDP strategic approach to renewable energy development is detailed in the document's renewable energy policy aim, which is as follows:

"*To facilitate renewable energy development in appropriate locations within our borough, whilst balancing the recognised benefits against any potential environmental or social impacts."*

The LDP-PS recognises that:

"*Renewable energy developments must therefore be accommodated in order to meet this demand and regional targets, whilst also protecting our environment and our sensitive landscapes*."

The LDP-PS contains a suite of planning policy that is material to the proposed Development, inclusive of renewable energy policy and policy across a range of topic areas. **Table 4.1** outlines the relevant LDP-PS planning policy considered material to the proposed Development EIA process.

***Table 4.1 – Mid & East Antrim Borough Council Local Development Plan- Plan, Planning Policy***

| LDP-PS Topic Area | LDP-PS Relevant Planning Policy |
|---|---|
| General Planning Policy | • Policy GP1- General Policy for all Development |
| Tourism | • Policy T0U1- Safeguarding of Tourism Assets |
| Transportation, Infrastructure and Connectivity | • Policy TR1- Access to Public Roads |
| Flood Risk and Drainage | • Policy FRD2 Protection of Flood Defence and Drainage Infrastructure<br>• Policy FRD3 - Management of Development in regard to Surface Water Flood Risk<br>• Policy FRD4 - Sustainable Drainage (SuDS)<br>• Policy FRD5 - Artificial Modification of Water Courses |
| Renewable Energy | • Policy RE1 -Renewable Energy Development |
| Telecommunications and Electricity Infrastructure | • Policy TEI1 Telecommunications and Electricity Infrastructure |
| Historic Environment | • Policy HE1 - Archaeological Remains and their Setting<br>• Policy HE2 - Historic Parks, Gardens and Demesnes<br>• Policy HE5 Development affecting the Setting of a Listed Building |
| Natural Heritage | • Policy NAT1 - European and Ramsar Sites- International<br>• Policy NAT2 - Species Protected by Law<br>• Policy NAT3 - Sites of Nature Conservation Importance- National<br>• Policy NAT4 - Sites of Nature Conservation- Local<br>• Policy NAT5 - Habitats, Species or features of Natural Heritage Importance |

### 4.2.2. Regional Development Strategy for Northern Ireland 2035

The Regional Development Strategy 2035 (RDS) strategic guidance actively promotes the shift to a lower carbon economy, the adaptation to climate change and the delivery of a secure and sustainable energy supply. One of the eight key aims of the RDS 2035 is to "*Take actions to reduce our carbon footprint and facilitate adaptation to climate change*."

The RDS 2035 regional guidance for the economy prioritises a secure energy supply stating *"RG5: Deliver a sustainable and secure energy supply."*

Supplementary guidance within the RDS 2035 seeks to:

"*Increase the contribution that renewable energy can make to the overall energy mix"*;

*"Strengthen the grid";*

*"Provide new gas infrastructure";*

*"Work with neighbours";* and

"*Develop "Smart Grid" Initiatives."*

Furthermore, the RDS 2035 states the following; *"There will need to be a significant increase in all types of renewable electricity installations and renewable heat installations, including a wide range of renewable resources for electricity generation both onshore and offshore to meet the Regions needs."*

Regional guidance for the environment at policy RG9 prioritises the need to reduce Northern Ireland's carbon footprint and the adaption of the region to climate change: "*RG9: Reduce our carbon footprint and facilitate mitigation and adaptation to climate change whilst improving air quality*."

The RDS 2035 notes that climate change is "*increasingly seen as one of the most serious problems facing the world*" and outlines that "*consideration needs to be given on how to reduce energy consumption and the move to more sustainable methods of energy production.*". The RDS 2035 identifies climate change mitigations measures which include those to:

"*Increase the use of renewable energies; Utilise local production of heat and/or electricity from low or zero carbon energy sources*."

The RDS 2035 outlines key climate change adaption measures including:

"*Re-use land, buildings and materials; Minimise development in areas at risk from flooding from rivers, the sea and surface water run-off; Protect soils; Protect and extend the ecosystems and habitats that can reduce or buffer the effects of climate change*."

### 4.2.3. Strategic Planning Policy Statement

The Strategic Planning Policy Statement (SPPS) is the regional planning policy document for Northern Ireland. It contains a suite of planning policy and is a material planning consideration in the assessment of all planning applications. Section 2.1 of the SPPS outlines that the planning system should positively and proactively facilitate development in Northern Ireland:

"*The objective of the planning system, consistent with Part 1, Section 1 of the Planning Act (Northern Ireland) 2011 (hereafter referred to as the 2011 Act), is to secure the orderly and consistent development of land whilst furthering sustainable development and improving well-being. This means the planning system should positively and proactively facilitate development that contributes to a more socially economically and environmentally sustainable Northern Ireland. Planning authorities should therefore simultaneously pursue social and economic priorities alongside the careful management of our built and natural environments for the overall benefit of our society."*

Section 3.3 of the SPPS states that "*planning authorities should deliver on all three pillars of sustainable development in formulating policies and plans and in determining planning applications and appeals."*. In terms of the environment, this is stated as:

"*Protecting and enhancing the built and natural environment (including our heritage assets, landscape and seascape character); seeking to ensure the planning system contributes to a reduction in energy and water usage, helping to reduce greenhouse gas emissions by continuing to support growth in renewable energy sources……*"

Furthermore, section 3.4 states:

"*The SPPS does not seek to promote any one of the three pillars of sustainable development over the other. In practice, the relevance of, and weight to be given to social, economic and environmental considerations is a matter of planning judgement in any given case. Therefore, in summary, furthering sustainable development means balancing social, economic and environmental objectives, all of which are considerations in the planning for and management of development.*"

Section 3.7 further expounds that "*furthering sustainable development also means ensuring the planning system plays its part in supporting the Executive and wider government policy and strategies in efforts to address any existing or potential barriers to sustainable development. This includes strategies, proposals and future investment programmes for key transportation, water and sewerage, telecommunications and energy infrastructure (including the electricity network).*"

Section 3.13 indicates that the planning system should help to mitigate and adapt to climate change by measures which include:

*"shaping new and existing developments in ways that reduce greenhouse gas emissions and positively build community resilience to problems such as extreme heat or flood risk;*

*promoting sustainable patterns of development, including the sustainable reuse of historic buildings where appropriate, which reduces the need for motorised transport, encourages active travel, and facilitates travel by public transport in preference to the private car;*

*avoiding development in areas with increased vulnerability to the effects of climate change, particularly areas at significant risk from flooding, landslip and coastal erosion and highly exposed sites at significant risk from impacts of storms;*

*considering the energy and heat requirements of new developments when designating land for new residential, commercial and industrial development and making use of opportunities for energy and power sharing, or for decentralised or low carbon sources of heat and power wherever possible;*

*promoting the use of energy efficient, micro-generating and decentralised renewable energy systems."*

Section 6.214 highlights that Northern Ireland has significant renewable energy resources and a vibrant renewable energy industry while Section 6.216 states that:

"*Renewable energy reduces our dependence on imported fossil fuels and brings diversity and security of supply to our energy infrastructure. It also helps Northern Ireland achieve its targets for reducing carbon emissions and reduces environmental damage such as that caused by acid rain. Renewable energy technologies support the wider Northern Ireland economy and also offer new opportunities for additional investment and employment, as well as benefitting our health and well being, and our quality of life."*

Section 6.218 outlines that the "*aim of the SPPS in relation to renewables is to facilitate the siting of renewable energy generating facilities in appropriate locations within the built and natural environment in order to achieve Northern Ireland's renewable energy targets and to realise the benefits of renewable energy without compromising other environmental assets of acknowledged importance.*"

Section 6.219 details the regional strategic development objectives for renewable energy which are to:

*"ensure that the environmental, landscape, visual and amenity impacts associated with or arising from renewable energy development are adequately addressed;*

*ensure adequate protection of the region's built, natural, and cultural heritage features; and.*

*facilitate the integration of renewable energy technology into the design, siting and layout of new development and promote greater application of the principles of Passive Solar Design*."

The SPPS does not introduce any different operational planning policy direction, distinct from the position of the LDP-PS that requires an additional planning policy assessment for consideration as a material planning consideration.

### 3.3.4. Material Planning Consideration- SPPS Review for Renewable & Low Carbon Energy

The DfI Planning policy review for renewable and low carbon energy is ongoing. At this juncture (May 2025), the updated policy is due for imminent publication. The degree of planning weight to be afforded to the updated SPPS regional planning policy in the planning decision-making process will be subject to review on a case-by-case basis. DfI Planning, when questioned what may happen if there is a significant gap between the updated SPPS policy and existing LDP planning policy, did not advise that the SPPS would have primacy, and rather that a ministerial direction is required to clarify how alignment should be enabled.

### 4.2.4. Climate Change Act (NI) 2022

Northern Ireland's first law to tackle climate change, the Climate Change Act (Northern Ireland) 2022 (the Climate Change Act), received Royal Assent on 6 June 2022. The Climate Change Act aims to have Northern Ireland play its part in the global and UK effort to tackle climate change by creating a framework that will establish a pathway to achieving emission reduction targets. This will help to ensure that Northern Ireland develops a greener, low carbon circular economy in which the environment can prosper and be protected.

The Climate Change Act includes a target for net-zero emissions by 2050 as well as a set of interim targets for 2030 and 2040 for reducing greenhouse gas emissions in Norther Ireland. Part 1, section 15 of the Climate Change Act specifies that "*The Department for the Economy must ensure that at least 80% of electricity consumption is from renewable sources by 2030.*"

### 4.2.5. Energy Strategy for Northern Ireland 2022- The Path to Net Zero Energy

In December 2021, the Department for the Economy published the 'Northern Ireland Energy Strategy- The Path to Net Zero' which detailed Northern Ireland's energy future over the next ten years and set the renewable electricity targets for 2030- identifying that 70% of electrical energy needed to be sourced from renewables by 2030, with flexibility to increase this target. Please note that this target has been superseded by the target of 80% by 2030 through the Climate Change Act, as outlined in **Section 4.2.4**.

In April 2025, the Department for the Economy published the 'Electricity Consumption and Renewable Generation in Northern Ireland: Year ending December 2024', which highlighted that for the 12-month period January 2024 to December 2024, 43.5% of total electricity consumption in Northern Ireland was generated from renewable sources. This represents a decrease of 2.3 percentage points on the previous 12-month period (January 2023 to December 2023). Of all renewable electricity generated within Northern Ireland over the 12-month period, 82.4% was generated from wind.

## 4.3. Key Questions for Consultees

- Do the Planning Authority and Statutory Consultees agree with the key policies listed in **Table 4.1** against which the environmental effects of the proposed Development will be assessed?
- Are there any other areas of policy guidance and/or planning considerations the Planning Authority and Statutory Consultees would recommend is considered during the EIA and included within the ES?
- Does the Planning Authority agree with our position that SPPS does not introduce any different operational planning policy direction, distinct from the position of the LDP-PS that requires an additional planning policy assessment?

# 5. Ecology (excluding Ornithology)

## 5.1. Introduction

This chapter outlines the potential effects of the proposed Development on terrestrial and freshwater ecological receptors (excluding ornithology, included in **Chapter 6**) and sets out the methodology to be undertaken to further assess the likely significant effects during the EIA.

The ES for the original Wolf Bog Windfarm application was submitted in 2004 (B9 Energy Services Ltd / Renewable Energy Systems Ltd, April 2004), with a Phase 1 habitat survey and an Irish hare survey undertaken in 2003. No ecology related information was available relating to the original application for Elliots Hill Windfarm. A feasibility study for the proposed Development, including a preliminary site walkover, was undertaken in 2023 (Envams Ltd, June 2023).

The scoping assessment considers the potential effects of the proposed Development during the following phases:

- Decommissioning of the currently operational Elliots Hill and Wolf Bog Windfarms;
- Construction of the proposed Development;
- Operation of the proposed Development; and
- Future decommissioning of the proposed Development.

## 5.2. Baseline and Key Sensitivities

### 5.2.1. Desk Study

To inform this Scoping Report, a web-based search was undertaken to identify and provide information on statutory sites with an international, national or local designation for ecological interests, located within proximity to the Site boundary (excluding sites designated for ornithology interest only, e.g. Special Protection Areas (SPAs)). Additionally, a search was undertaken for records available in the public domain of relevant priority and protected species from within 5 km of the Site boundary in the last 10 years (2014 to 2024). The online GIS tool Northern Ireland Environment Agency (NIEA) Natural Environment Map Viewer (NIEA Map Viewer) and the National Biodiversity Network Atlas (NBN Atlas) were used.

Data were sought for the following (with search areas defined):

- SACs – within 10 km of the Site boundary;
- Area of Special Scientific Interest (ASSIs) – within 5 km of the Site boundary;
- Local and national nature reserves (including Royal Society for the Protection of Birds (RSPB) and Wildlife Trust Reserves) – within 5 km of the Site boundary;
- Locally designated sites such as Local Wildlife Sites (LWS) – within 2 km of the Site boundary; and
- Northern Ireland Priority species (Department for Communities, Northern Ireland List of Northern Ireland Priority Species 2023) and species protected under Wildlife (Northern Ireland) Order Schedules 5, 6, 6A and 7 – within 5 km of the Site boundary.

No internationally or nationally designated sites (excluding sites designated for ornithological interests) are within the search area (10 km and 5 km respectively). Seven locally designated sites (LWS) were within the 2 km search area (see **Table 5.1**). No information could be found on the designation criteria or habitats/species present within the LWSs. Information on these sites will be sought from the Centre for Environmental Data and Recording (CEDaR) as part of the EIA process.

*Table 5.1 –Designated Sites within Relevant Search Distances*

| Site | Designation | Distance from Development (km) |
|---|---|---|
| **Locally designated sites (within 2 km)** | | |
| **Breckenhill & Drumdarragh** | LWS | 0.2 |
| **Tildarg Road** | LWS | 0.4 |
| **Loonburn** | LWS | 0.6 |
| **Drumdarragh Hill** | LWS | 0.7 |
| **Tildarg dam** | LWS | 0.8 |
| **Carnlea Road North** | LWS | 0.8 |
| **Sandy** | LWS | 1.2 |

Records of 11 protected and/ or priority species were returned from the NBN Atlas search within 5 km of the Site (see **Table 5.2**).

*Table 5.2 – NBN Records of Protected and Priority Species within 5 km of the Site from 2014-2024*

| Common name | No. records | Most recent record | Closest record to site (km) | Legal protection/ conservation status |
|---|---|---|---|---|
| **Badger** | 1 | 2022 | 0.7 | Wildlife (NI) Order Schedule 5, 6, 6A and 7 |
| **Common frog** | 3 | 2023 | 4.2 | Wildlife (NI) Order Schedule 7 |
| **Common lizard** | 4 | 2024 | 1.7 | Wildlife (NI) Order Schedule 5, 6 and 7; NI Priority Species list |
| **European eel** | 1 | 2016 | 3.3 | NI Priority Species list |
| **Hedgehog** | 3 | 2017 | 3.6 | Wildlife (NI) Order Schedule 5, 6 and 7; NI Priority Species list |
| **Irish hare** | 26 | 2021 | 1.2 | Wildlife (NI) Order Schedule 6; NI Priority Species List |
| **Otter** | 1 | 2018 | 4.5 | Wildlife (NI) Order Schedule 6 and 6A; NI Priority Species List |
| **Pine marten** | 4 | 2020 | 3.0 | Wildlife (NI) Order Schedule 5, 6, 6A and 7; NI Priority Species List |
| **Red squirrel** | 21 | 2024 | 1.2 | Wildlife (NI) Order Schedule 5, 6 and 7; NI Priority Species List |
| **Stoat** | 1 | 2019 | 1.2 | Wildlife (NI) Order Schedule 6A; NI Priority Species List |
| **Small heath** | 2 | 2017 | 1.3 | NI Priority Species List |

### 5.2.2. Habitat

The habitats reported at Wolf Bog Windfarm in the 2004 ES were acid grassland, marshy grassland and coniferous woodland plantation. The initial desktop and short walkover undertaken as part of the 2023 feasibility study (Envams Ltd, June 2023) reported the general habitat within the Site to consist of acid grassland, marshy grassland, bog and heath habitats. Although there are bog habitats within the Site these were reported as being heavily degraded from historical and continuing grazing and drainage, making it unlikely that these areas of bog are active. Additionally, limited peat probing undertaken during the site walkover identified no locations with greater than 30 cm peat depth. It is therefore unlikely that any substantial areas of active blanket bog are present within the Site.

There are no rivers (as defined under the Water Framework Directive) within the Site (Azimap, Rivers Defined Under the Water Framework website). The only watercourses shown on base mapping within the Site are anticipated to be artificial drainage ditches that do not appear to be linked to any natural watercourses.

### 5.2.3. Protected Species

The only protected species discussed within the 2004 Wolf Bog Windfarm ES was Irish hare, with transect surveys undertaken in 2003. Hare densities were reported to be low, with one hare per $km^2$ estimated.

During the feasibility study walkover in 2023 suitable habitat for otter, badger and reptiles was identified within the Site. The habitat within the Site is not considered to be suitable for red squirrel and pine marten due to the lack of woodland. However, the coniferous plantation immediately beyond the north west boundary of the Site could provide suitable habitat for these species. It was noted that there were limited roosting opportunities available for bats within the Site.

The habitat within the Site is considered to be of low value to bats, based on the Bat Conservation Trust (BCT) guidelines (2023). This is because there are unlikely to be any features suitable for roosting bats and minimal habitat features suitable for flight-paths or foraging. A bat roost survey was undertaken in April 2025 following BCT guidelines (2023) to determine if any potential roost features are present within the vicinity of the new turbine locations. No features were recorded within the Site that may have the potential to support a bat roost.

### 5.2.4. Key Sensitivities

The scoping desktop review noted areas of bog habitats within the Site. The proposed Development will result in direct habitat loss, though the extent to which different habitats will be impacted is unknown until further surveys and design are undertaken. The proposed Development will be designed in such a way that impacts on peatland habitats will be minimised as far as possible.

Some species of bat are known to be of high risk to turbine collision. Therefore, there is the potential for bats to be impacted during the operational phase of the proposed Development.

## 5.3. Potential Effects Assessment

The following subsections outline the ecological effects scoped in and scoped out for more detailed assessment through the EIA process. Where the term “decommissioning” is used, it is in reference to both decommissioning of the existing Elliots Hill and Wolf Bog Windfarms and future decommissioning of the proposed Development.

### 5.3.1. Scoped In Effects

#### 5.3.1.1. Local Wildlife Sites

There are seven LWSs within 2 km of the Site, all of which are hydrologically connected to the operational Elliots Hill and Wolf Bog Windfarms and the proposed Development. Therefore, there is potential for all of the LWSs to be impacted by the proposed Development during the decommissioning and construction phases.

#### 5.3.1.2. Habitats

The proposed Development will result in habitat loss during the decommissioning and construction phases and some of the areas in the Site are on peatland. Therefore, an assessment will be required to ascertain the status of the peatland (i.e. active or inactive) to minimise impacts where possible.

#### 5.3.1.3. Protected Species

There is suitable habitat within the Site and a 250 m buffer for protected mammals (otter, badger, pine marten and red squirrel). If any resting places (e.g. otter holt or badger sett) are recorded within 250 m of the existing operational windfarms and proposed Development, then there is the potential for decommissioning and construction phase activities to disturb these protected species.

#### 5.3.1.4. Operational Effects on Bats

Some bat species are considered to be at high risk of collision with wind turbines, meaning that the proposed Development has potential to impact bats through collisions during the operational phase only (see **Section 5.3.2.5** for details regarding decommissioning and construction phase effects).

### 5.3.2. Scoped Out Effects

#### 5.3.2.1. Irish Hare

Irish hare is protected from certain types of killing, through inclusion on Schedule 6 of the Wildlife (Northern Ireland) Order. The population density of Irish hare at Wolf Bog Windfarm was found to be low in the Wolf Bog ES (2004), with an estimated one hare per $km^2$. It is therefore assumed that the species will still be present within the Site in low numbers. Decommissioning and construction phase embedded mitigation would include species protection plans and presence of an Environmental Clerk of Works (ECoW), which would minimise direct impacts on Irish Hare during these development phases. The proposed Development will result in a small amount of habitat loss, with a large amount of suitable habitat remaining within the Site and the surrounding area. Therefore, it is unlikely that the proposed Development will have a significant displacement effect on Irish hare. Irish hare may be disturbed during the decommissioning or construction phase of the proposed Development, but this is considered to be short term and temporary. It is therefore considered unlikely that Irish hare would be significantly impacted by the proposed Development and it is proposed that the species is scoped out of further assessment.

#### 5.3.2.2. Common Lizard

Common lizard is fully protected from certain types of killing, through inclusion on Schedule 6 of the Wildlife (Northern Ireland) Order. It is likely that there is suitable habitat within the Site for common lizard, and there were four records of common lizard within 5 km of the Site in the desk study. It is therefore assumed that common lizard is likely to be present at the proposed Development.

The proposed Development will result in only a small amount of habitat loss, with a large amount of suitable habitat remaining within the Site and the surrounding area. Therefore, it is unlikely that the proposed Development will have a significant displacement effect on common lizard. Common lizard may be disturbed during the decommissioning or construction phases of the proposed Development, but this is considered to be short term and temporary. Common lizard is a highly mobile species, meaning that individuals are likely to move out of the way of

decommissioning and construction activities. However, embedded mitigation, including a species protection plan and presence of an ECoW, would ensure that no offence is committed under the Wildlife (Northern Ireland) Order. It is therefore considered unlikely that common lizard will be significantly impacted by the proposed Development and it is proposed that the species is scoped out of further assessment.

#### 5.3.2.3. Fish

There are no natural watercourses within the Site and therefore it is assumed that there is no suitable habitat for priority fish species at the proposed Development. Some artificial drainage ditches are visible on base mapping, which do not appear to be connected to natural watercourses. However, these could have some connectivity with natural watercourses. Potential impacts on fish will therefore be limited to short-term temporary pollution events. Embedded mitigation would include measures to protect habitats and watercourses, such as a pollution prevention plan and presence of an ECoW during the decommissioning and construction phases. Therefore, it is considered that there will be no significant impact on fish and it is proposed that fish are scoped out of further assessment.

#### 5.3.2.4. Operational Effects for Habitats

The operational phase of the Proposed Development will not result in any direct habitat loss. Impacts on habitats during the operational phase will be limited to potential pollution events. Embedded mitigation will include measures to protect habitats, such as a pollution prevention plan. This means that potential operational effects on habitats would be sufficiently reduced so that there would be no significant impact. Therefore, it is proposed that operational effects on habitats are scoped out of further assessment.

#### 5.3.2.5. Decommissioning and Construction Effects for Bats

Decommissioning and construction effects on bats are limited to disturbance of roosting bats. No features were recorded within the Site that may have the potential to support roosting bats. Therefore, there is no route to impact for bats during decommissioning of the currently operational windfarms or during the construction phase. There is a possibility that trees/structures within the site may develop potential bat roosting features prior to decommissioning of the proposed Development that could be disturbed during the final decommissioning phase. However, embedded mitigation, including pre-works surveys, a species protection plan and presence of an ECoW, would ensure that no offence is committed under the Wildlife (Northern Ireland) Order. It is therefore considered unlikely that bats will be significantly impacted during decommissioning and construction phases. As such, it is proposed that decommissioning and construction effects on bats ats are scoped out of further assessment.

##### 5.3.2.6. Operational Effects

There would be minimal activity during the operational period, and therefore there are unlikely to be any significant disturbance effects during this period. Furthermore, embedded mitigation will include measures to protect habitats and species (such as pollution prevention measures and site speed limits). Therefore, operational effects for the following features are considered unlikely to be significant and it is proposed that they are scoped out of further assessment:

- Local Wildlife Sites;
- Habitats;
- Otter;

- Badger;
- Pine marten; and
- Red squirrel.

## 5.4. Proposed Methodology for Further Assessment

Further assessment of likely significant effects during the EIA will involve undertaking a further data search for protected species and a suite of field surveys to ascertain the baseline ecological status within the Site.

### 5.4.1. Desktop Studies

As part of the EIA, a data request will be sent to the CEDaR to search for species of known conservation status (i.e. species protected under the Wildlife (Northern Ireland) Order Schedule 5, 6, 6A and 7) within 5 km of the Site and for further information regarding LWS within 2 km of the Site.

### 5.4.2. Field Surveys

The following field surveys are proposed to be undertaken to inform the EIA baseline for the proposed Development:

- UK Hab (UKHab Ltd., 2023) and National Vegetation Classification (JNCC, 2006) surveys within the Site and a 250 m buffer (access permitting), following standard guidance;
- An active peat assessment in any areas of potentially active bog identified during habitat surveys, following NIEA guidance (NIEA, 2012);
- Protected species surveys within the Site and a 250 m buffer (access permitting). Surveys will focus on otter (English Nature, 2003), badger (The Mammal Society, 1989), pine marten and red squirrel (The Mammal Society, 2012). The survey will follow standard guidance for relevant species; and
- Bat surveys, following guidance (NIEA, 2024):
    - Carcass searching with dogs will be undertaken between June and September at eight turbine locations, split evenly between the operational windfarms. The locations will be selected to cover turbine locations for the proposed Development and also to cover areas adjacent to habitats of suitability for foraging and commuting bats. The survey period will be split into three blocks of survey effort commencing in Mid-June, each block lasting 9 days with a visit every 2 days.
    - Static detector surveys will take place at the eight turbine locations proposed for carcass searching, with an additional two deployment locations proposed to cover areas adjacent to habitats of suitability for foraging and commuting. Full spectrum static bat detectors will be used. The survey period will be split into three blocks of survey effort: spring (April to May), summer (June to August) and autumn (September to October). A minimum of 30 nights of survey will be undertaken, with a minimum of 10 consecutive nights of survey during each survey period.

### 5.4.3. Effects Assessment

The effects assessment approach will follow the Chartered Institute for Ecology and Environmental Management (CIEEM) guidelines. It should be noted that professional judgement

will also be applied in determining the value level for Important Ecological Features (IEFs). IEFs will be determined based on these guidelines and with consideration of effects that are potentially significant as set out under the EIA Regulation. The guidelines set out the ecological impact assessment (or EcIA) process, through the following stages:

- Identification of IEFs through field survey and/or research;
- Determination of the importance of each identified IEF;
- Assessment of impacts affecting those IEFs and/or resources, using a defined importance threshold with reference to ecological processes and functions as deemed appropriate;
- Determining the extent, magnitude, duration, timing and frequency of the impacts following the application of standard best practice working methods and embedded mitigation;
- Assessing the potential for impact reversibility;
- Determining the level of confidence in the above impact predictions;
- Identification of likely significant impacts in the absence of mitigation; and
- The identification of residual impacts following implementation of mitigation.

### 5.4.4. Bat Activity Assessment

NIEA recommend using the online tool (Ecobat) as part of static bat detector activity assessment. However, it is acknowledged in this guidance that there is a paucity of data from Northern Ireland and Ireland in this database, meaning that analysis using Ecobat is unlikely to produce results that accurately reflect bat activity levels in Northern Ireland. It is therefore proposed that this tool is not used as part of the assessment for the proposed Development. Instead, a search would be undertaken for comparable data in the public domain against which the activity at the proposed Development could be compared. This approach is considered more likely to produce a realistic understanding of the relative activity of bats at the proposed Development compared with the surrounding area.

### 5.4.5. Habitat Restoration and Enhancement

Infrastructure for the currently operational Elliots Hill and Wolf Bog Windfarms that would not be required for the proposed Development, would be decommissioned. The Applicant would seek to restore the habitat in these areas.

It is proposed that habitat lost as a result of the construction of the proposed Development would be compensated for through creation and/or restoration of appropriate habitats. Additionally, a scheme of biodiversity enhancements would be proposed as part of the proposed Development. The compensation and enhancement strategy would be devised based on the results of the ecological surveys undertaken as part of the EIA. However, based on review of the feasibility study (Envams Ltd, June 2023) a compensation and enhancement strategy of the Site might include:

- Peatland restoration;
- Woodland creation;
- Hedgerow creation;
- Grassland management; and
- Bird nest box installation.

## 5.5. Summary

A summary of the scoping assessment findings is provided in **Table 5.3**.

***Table 5.3 – Ecology Scoping Assessment Summary***

| Potential Effect | Proposed Development Phase* | Rationale | Further Assessment |
|---|---|---|---|
| **Scoped In** | | | |
| **Local Wildlife Sites** | Decommissioning, Construction | Hydrological connectivity with operational and proposed Developments | EcIA |
| **Habitats** | Decommissioning, Construction | Habitat loss, potential for impact on peatland | EcIA |
| **Otter** | Decommissioning, Construction | Potential for disturbance to otter resting places if recorded during surveys | EcIA |
| **Badger** | Decommissioning, Construction | Potential for disturbance to badger setts if recorded during surveys | EcIA |
| **Red squirrel** | Decommissioning, Construction | Potential for disturbance to red squirrel dreys if recorded during surveys | EcIA |
| **Pine marten** | Decommissioning, Construction | Potential for disturbance to pine marten dens if recorded during surveys | EcIA |
| **Bats** | Decommissioning, Construction, Operation | Potential for disturbance to bat roosts if recorded during surveys.<br>Potential for bat collisions during the operational phase | EcIA |
| **Scoped Out** | | | |
| **Local Wildlife Sites** | Operation | Limited disturbance due to minimal onsite activity during operation | N/A |
| **Habitat Loss** | Operation | Limited disturbance due to minimal onsite activity during operation. | N/A |
| **Irish hare** | Decommissioning, Construction, Operation | The population size is small and there is sufficient suitable habitat in the surrounding area, meaning that there is unlikely to be a significant impact. | N/A |
| **Common lizard** | Decommissioning, Construction, Operation | Any potential decommissioning and construction impacts will be reduced to non-significant through implementation of embedded mitigation. Habitat loss will be small scale and there is sufficient suitable habitat in the surrounding area. | N/A |

| | | | |
|---|---|---|---|
| **Fish** | Decommissioning, Construction, Operation | Any potential impacts will be reduced to non-significant through implementation of embedded mitigation. | N/A |
| **Protected species (excluding bats)** | Operation | Limited disturbance due to minimal onsite activity during operation | N/A |

## 5.6. Questions for Consultees

- Do consultees agree that the surveys and assessment methodology proposed for the EIA are appropriate and proportionate to the potential risks posed to ecological features by the proposed Development?
- **Table 5.3** notes the receptors and potential impact proposed to be included within the EcIA. Do consultees agree that this sufficiently covers the potential impacts on features from the proposed Development and what is proposed to be scoped out?

# 6. Ornithology

## 6.1. Introduction

This chapter outlines the potential effects of the proposed Development on ornithological receptors and sets out the methodology to be undertaken to further assess the likely significant effects during the EIA.

The scoping assessment considers the potential effects of the proposed Development during the following phases — with a focus on risks of collision, disturbance and displacement, barrier effects, and habitat loss or degradation:

- Decommissioning of existing Elliots Hill Windfarm and Wolf Bog Windfarm;
- Construction of the proposed Development;
- Operation of the proposed Development; and
- Future decommissioning of the proposed Development.

The assessment will give due regard to the proposed Development being a repower, with 15 existing turbines within the Site potentially already influencing bird behaviour and activity within the Site.

The EIA scoping has been based on professional judgement, existing ornithological data for the Site and wider area, suite of field surveys, relevant published research, post-construction windfarm monitoring studies, and the following core guidance(s):

- NatureScot (2025a): recommended bird survey methods to inform impact assessment of onshore windfarms;
- NatureScot (formerly Scottish Natural Heritage, SNH, 2014): Repowering onshore wind farms: bird survey requirements;
- NIEA guidance and Department for Environment, Food & Rural Affairs (DEFRA) on assessing impacts on protected species and designated sites;
- NatureScot (2025b): assessing significance of impacts from onshore windfarms on birds (as applicable to wider UK practice);

- NatureScot (2025c): assessing the cumulative impacts of onshore wind farms on birds;
- NatureScot (2024): guidance on using an updated collision risk model to assess bird collision risk at onshore wind farms;
- NatureScot (SNH, 2016): guidance to assess the connectivity with Special Protection Area;
- British Trust for Ornithology (BTO) datasets and research on bird movements, wind farm interactions, and collision risks;
- The Wildlife (Northern Ireland) Order 1985 and The Conservation (Natural Habitats, etc.) Regulations (NI) 1995 (as amended); and
- Other sector-specific best practice relevant to wind energy development in Northern Ireland.

## 6.2. Baseline and Key Sensitivities

The proposed Development Site is located at the southern edge of the Antrim Plateau, within a transitional upland-lowland landscape. It occupies a hollow between Elliotts Hill (300 m Above Sea Level [ASL]) and Big Collin (353 m ASL), with undulating topography and elevations up to 290 m ASL at Wolf Bog. Land use within the Site is dominated by extensive sheep grazing over unimproved acid grassland, with areas of marshy grassland, degraded bog, heathland, and small blocks of coniferous forestry. Field boundaries comprise stone walls and post-and-wire fencing.

Existing infrastructure at the Site includes the operational Elliots Hill and Wolf Bog Windfarms, internal access tracks, and overhead power lines.

### 6.2.1. Designated Sites

A number of internationally and nationally designated sites with ornithological interests have been identified within the wider study area. The standard study area of 10 km has been applied and extended to 20 km for internationally designated sites that support qualifying migratory goose and swan species, which are known to forage at distances of up to 20 km from their roost sites. These are presented in **Table 6.1** and **Figure 6.1.**

**Table 6.1** identifies international designated sites with ornithological qualifying features located within 20 km of the proposed Development. Only sites with relevant ornithological interest have been included. Assessment of potential connectivity, functional linkage and sensitivity of these sites to impacts from the proposed Development is addressed in later sections, subject to baseline survey results.

***Table 6.1 - National And International Designated Sites Within 20 km Of the Site.***

| Site | Distance | Qualifying features |
|---|---|---|
| **Antrim Hills Special Protection Area (SPA) (DAERA 2015[2])** | 2.6 km | Breeding:<br><br>Hen harrier (*Circus cyaneus*),<br>Merlin (*Falco columbarius*) |
| **Lough Neagh and Lough Beg SPA and Ramsar** | 12.2 km | SPA breeding, passage, and wintering species:<br><br>Common tern (*Sterna hirundo*) – breeding, |

[2] *Antrim Hills SPA Conservation Objectives: DAERA 2015*

| | | |
|---|---|---|
| **(DAERA 2015[3]; JNCC, 2005[4]).** | | Great crested grebe (*Podiceps cristatus*) – breeding, passage, wintering,<br>Whooper swan (*Cygnus cygnus*) – wintering,<br>Bewick's swan (*Cygnus columbianus bewickii*) – wintering,<br>Golden plover (*Pluvialis apricaria*) – wintering,<br>Pochard (*Aythya ferina*) – wintering,<br>Tufted Duck (*Aythya fuligula*) – wintering,<br>Scaup (*Aythya marila*) – wintering, and<br>Goldeneye (*Bucephala clangula*) – wintering.<br><br>SPA assemblage species:<br><br>Little grebe (*Tachybaptus ruficollis*) – wintering,<br>Cormorant (*Phalacrocorax carbo*) – wintering,<br>Greylag goose (*Anser anser*) – wintering,<br>Shelduck (*Tadorna tadorna*) – wintering,<br>Wigeon (*Mareca penelope*) – wintering,<br>Gadwall (*Mareca strepera*) – wintering,<br>Teal (*Anas crecca*) – wintering,<br>Mallard (*Anas platyrhynchos*) – wintering,<br>Shoveler (*Spatula clypeata*) – wintering,<br>Coot (*Fulica atra*) – wintering, and<br>Lapwing (*Vanellus vanellus*) – wintering.<br><br>SPA waterfowl assemblage (wintering) component species:<br><br>Whooper swan (*Cygnus cygnus*),<br>Bewick's swan (*Cygnus columbianus bewickii*),<br>Golden plover (*Pluvialis apricaria*),<br>Great crested grebe (*Podiceps cristatus*),<br>Pochard (*Aythya ferina*),<br>Tufted duck (*Aythya fuligula*),<br>Scaup (*Aythya marila*),<br>Goldeneye (*Bucephala clangula*),<br>Little grebe (*Tachybaptus ruficollis*),<br>Cormorant (*Phalacrocorax carbo*),<br>Greylag goose (*Anser anser*),<br>Shelduck (*Tadorna tadorna*),<br>Wigeon (*Mareca penelope*),<br>Gadwall (*Mareca strepera*),<br>Teal (*Anas crecca*),<br>Mallard (*Anas platyrhynchos*),<br>Shoveler (*Spatula clypeata*),<br>Coot (*Fulica atra*), and<br>Lapwing (*Vanellus vanellus*).<br><br>Ramsar:<br><br>The Lough Neagh and Lough Beg Ramsar (Lough Neagh Ramsar) also qualifies under Criterion 4 for supporting an important assemblage of breeding birds including, in nationally important numbers, great crested grebe (*Podiceps cristatus*), gadwall (*Mareca strepera*), pochard (*Aythya ferina*), tufted duck (*Aythya fuligula*), snipe (*Gallinago gallinago*) and redshank (*Tringa totanus*). Other important breeding wetland species include shelduck (*Tadorna tadorna*), teal (*Anas crecca*), shoveler (*Spatula clypeata*), lapwing (*Vanellus vanellus*) and curlew (*Numenius arquata*). |

[3] *Lough Neagh and Lough Beg SPA Conservation Objectives. DAERA 2015*
[4] *Information Sheet on Ramsar Wetlands (RIS): Lough Neagh and Lough Beg. JNCC 2005*

| | | |
|---|---|---|
| | | Assemblages of international importance:<br><br>Tundra swan (Cygnus columbianus bewickii) - spring/autumn,<br>Common goldeneye (Bucephala clangula clangula) – winter,<br>Common pochard (Aythya ferina) - winter,<br>Greater scaup (Aythya marila marila) – winter,<br>Tufted duck (Aythya fuligula) – winter, and<br>Whooper swan (Cygnus cygnus) – winter.<br><br>Bird species currently occurring at levels of national importance:<br><br>Black-headed gull (*Chroicocephalus ridibundus*) – breeding/passage,<br>Lesser black-backed gull (*Larus fuscus*) – breeding,<br>Common tern (*Sterna hirundo*) – breeding,<br>Great crested grebe (Podiceps cristatus) – spring/passage,<br>Gadwall (Mareca strepera) – spring/passage,<br>Mallard (Anas platyrhynchos) – spring/passage,<br>Red-breasted merganser (Mergus serrator) – spring/passage, and<br>Coot (Fulica atra) – spring/passage).<br><br>Little grebe (*Tachybaptus ruficollis*) – winter,<br>Shelduck (*Tadorna tadorna*) – winter,<br>Wigeon (*Mareca penelope*) – winter,<br>Teal (*Anas crecca*) – winter,<br>Golden plover (*Pluvialis apricaria*) – winter,<br>Mew gull (*Larus canus*) – winter, and<br>Lapwing (*Vanellus vanellus*) – winter. |
| **Garron Plateau Ramsar** | 15 km | Species currently occurring at levels of national importance:<br>Species regularly supported during the breeding season:<br><br>European golden plover (*Pluvialis apricaria), and*<br>Assemblage<br><br>The Site supports a diverse assemblage of breeding birds, including: red grouse (*Lagopus lagopus*), golden plover (*Pluvialis apricaria*), dunlin (*Calidris alpina*), merlin (*Falco columbarius*), and hen harrier (*Circus cyaneus*). |
| **Larne Lough SPA/Ramsar (JNCC, 2005[5])** | 16.7 km | SPA/Ramsar:<br><br>Sandwich tern (*Thalasseus sandvicensis*) – breeding population,<br>Roseate tern (*Sterna dougallii*) – breeding population,<br>Common tern (*Sterna hirundo*) – breeding population, and<br>Light-bellied brent goose (*Branta bernicla hrota*) – wintering population.<br><br>Additional ASSI features:<br><br>Goldeneye (*Bucephala clangula*) – wintering population,<br>Great crested grebe (*Podiceps cristatus*) – wintering population,<br>Red-breasted merganser (*Mergus serrator*) – wintering population,<br>Shelduck (*Tadorna tadorna*) – wintering population,<br>Redshank (*Tringa totanus*) – wintering population, and<br>Breeding bird assemblage<br><br>Ramsar: |

[5] *Information Sheet on Ramsar Wetlands (RIS): Larne Lough. JNCC 2005*

| | | |
|---|---|---|
| | | Light-bellied brent goose, (*Branta bernicla hrota*) – winter. |
| **Belfast Lough Open Water SPA (DAERA, 2015)[6]** | 18.2 km | Great crested grebe - wintering. |
| **Belfast Lough (DAERA, 2015)[7] SPA and Ramsar (DAERA, 2015[8]; JNCC, 1998[9])** | 18.2 km | Redshank - wintering population,<br>Black-tailed godwit - passage population,<br>Great crested grebe - wintering population (this species now attributed to Belfast Lough Open Water SPA.<br><br>The following species are also cited in the Ramsar:<br><br>Black-tailed godwit – passage, and<br>Redshank – passage.<br><br>Species currently occurring at levels of national importance:<br><br>Common eider (*Somateria mollissima*) – passage,<br>Cormorant (*Phalacrocorax carbo*) - passage,<br>Ruff (*Philomachus pugnax*) – passage,<br>Red-throated diver (*Gavia stellata*) – winter,<br>Common shelduck (*Tadorna tadorna*) – winter,<br>Greater scaup (*Aythya marila*) – winter,<br>Common goldeneye (*Bucephala clangula*) – winter,<br>Red-breasted merganser (*Mergus serrator*) – winter,<br>Ringed plover (*Charadrius hiaticula*) – winter,<br>Red knot (*Calidris canutus*) – winter,<br>Ruddy turnstone (*Arenaria interpres*) – winter, and<br>Mew gull (*Larus canus*) – winter. |
| **Garron Plateau (ASSI) (DAERA, 2015[10])** | 15 km | Red grouse (*Lagopus lagopus scotica*) – breeding,<br>Golden plover (*Pluvialis apricaria*) – breeding, and<br>Dunlin (*Calidris alpina*) – breeding. |
| **Larne Lough (ASSI) (DAERA, 2015[11])** | 16.7km | Black-tailed godwit (*Limosa limosa*) – wintering,<br>Great cormorant (*Phalacrocorax carbo*) – wintering,<br>Curlew (*Numenius arquata*) – wintering,<br>Dunlin (*Calidris alpina*) – wintering,<br>Eider (*Somateria mollissima*) – wintering,<br>Goldeneye (*Bucephala clangula*) – wintering,<br>Great crested grebe (*Podiceps cristatus*) – wintering,<br>Knot (*Calidris canutus*) – wintering,<br>Lapwing (*Vanellus vanellus*) – wintering,<br>Mallard (*Anas platyrhynchos*) – wintering,<br>Oystercatcher (*Haematopus ostralegus*) – wintering,<br>Red-breasted merganser (*Mergus serrator*) – wintering,<br>Redshank (*Tringa totanus*) – wintering,<br>Ringed plover (*Charadrius hiaticula*) – wintering,<br>Scaup (*Aythya marila*) – wintering,<br>Shelduck (*Tadorna tadorna*) – wintering, and<br>Turnstone (*Arenaria interpres*) – wintering. |
| **Outer Belfast Lough (ASSI) (DAERA, 2015[12])** | 18.2 km | Black-tailed godwit (*Limosa limosa*),<br>Great cormorant (*Phalacrocorax carbo*),<br>Curlew (*Numenius arquata*),<br>Dunlin (*Calidris alpina*),<br>Eider (*Somateria mollissima*), |

[6] *Belfast Lough Open Water SPA Citation Document and Map. DAERA, 2015*
[7] *Lough SPA Conservation Objectives. DAERA, 2015*
[8] *Belfast Lough Literature. DAERA, 2015*
[9] *Information Sheet on Ramsar Wetlands (RIS): Belfast Lough. JNCC, 1998*
[10] *Garron Plateau ASSI Citation and VAM. DAERA, 2015*
[11] *Larne Lough ASSI Citation Documents and Map. DAERA. DAERA, 2015*
[12] *Outer Belfast Lough ASSI Citation Documents and Map. DAERA, 2015*

| | | |
|---|---|---|
| | | Goldeneye (*Bucephala clangula*),<br>Great crested grebe (*Podiceps cristatus*),<br>Knot (*Calidris canutus*),<br>Lapwing (*Vanellus vanellus*),<br>Mallard (*Anas platyrhynchos*),<br>Oystercatcher (*Haematopus ostralegus*),<br>Red-breasted merganser (*Mergus serrator*),<br>Redshank (*Tringa totanus*),<br>Ringed plover (*Charadrius hiaticula*),<br>Scaup (*Aythya marila*),<br>Shelduck (*Tadorna tadorna*),<br>Turnstone (*Arenaria interpres*), and |
| **Straidkilly Wood Area of Special Scientific Interest (ASSI)** | 19.6 km | Breeding bird assemblage. |

**Note:** only designated sites with ornithological interest have been considered.

### 6.2.2. Protected Species

- Species listed on Annex I of the EU Birds Directive (e.g. Hen Harrier, Merlin, Golden Plover);
- Species listed under Schedule 1 of the Wildlife (Northern Ireland) Order 1985 (as amended);
- Species included on the Northern Ireland Priority Species List;
- Species listed as Scarce or Rare by the Irish Rare Breeding Birds Panel (IRBBP);
- Red- and Amber-listed species under Birds of Conservation Concern in Northern Ireland (BoCCNI); and
- Priority bird species for assessment when considering the development of onshore wind farms in Scotland, listed in Annex 1 of NatureScot guidance (2025b).

It is important to note that the list of priority bird species for assessment in relation to onshore windfarm development in Scotland has been recently updated to include gull species, specifically black-headed gull, common gull, great black-backed gull, herring gull, and lesser black-backed gull). Gulls can forage large distances and may be connected to an SPA and need to be assessed as such.

These species may be sensitive to windfarm development through potential effects such as disturbance, displacement, collision risk, or changes to habitat quality. Their potential presence and status will be investigated through targeted field surveys (see **Section 6.4**) and considered in subsequent impact assessment, where relevant.

### 6.2.3. Key Sensitivities

With reference to **Table 6.1**, key sensitivities identified are:

- Designated Sites: SPAs, Ramsar Sites, and ASSIs within the 10–20 km study area that support qualifying bird species with potential to range into the Site or be affected indirectly (e.g. Antrim Hills SPA, Lough Neagh and Lough Beg SPA/Ramsar);
- Breeding Raptors and Upland Birds: Species such as Hen Harrier, Merlin, and Golden Plover (all Annex I and/or SPA species), and Schedule 1/NI Priority Species that may be sensitive to disturbance, displacement, or collision risk;

- Ground-Nesting Waders and Passerines: BoCCNI Red/Amber-listed species potentially breeding within or near the Site;
- Mobile Qualifying Features of SPAs/Ramsars: Migratory waterbirds (if applicable) that may use land outside SPA/Ramsar boundaries as functionally linked habitat, particularly during winter or passage periods; and
- Potential Cumulative Effects: The presence of existing operational windfarm infrastructure within and around the Site may contribute to cumulative risks when considered in combination with the proposed Development.

## 6.3. Potential Effects Assessment

### 6.3.1. Scoped In Effects

The following potential effects on ornithological receptors will be considered in the detailed assessment:

- Collision Risk: Potential for collision with turbine blades, particularly for mobile species such as raptors and larger waders flying at rotor height;
- Disturbance and Displacement: Temporary or longer-term avoidance of areas due to human activity, noise, or construction operations, especially during breeding season;
- Barrier Effects: Interference with flight paths or local movement patterns of birds due to turbine layout or blade rotation;
- Permanent Habitat Loss: The proposed Development will result in the loss of some ornithological habitat from the location of new turbines and access tracks;
- Temporary Habitat Loss or Degradation: Groundworks and construction activities may temporarily reduce habitat quality or availability;
- Indirect Effects on Designated Sites: Where mobile SPA or Ramsar qualifying species may range into the Site (e.g. geese, hen harrier, golden plover), functional linkage will be considered; and
- Cumulative Effects: Potential for additive or synergistic effects with nearby existing or proposed wind energy developments.

### 6.3.2. Scoped Out Effects

The following effects or receptors are proposed to be scoped out of further assessment for the reasons stated:

- Passerine Species (BoCCNI only): According to the NatureScot guidance (2025a), passerines are not considered highly vulnerable to windfarm impacts and will not be assessed individually, although assemblage-level effects will be noted where relevant;
- Larne Lough SPA / Ramsar, Belfast Lough SPA / Ramsar, Belfast Lough Open Water SPA and Straidkilly Wood ASSI: These sites lie >16 km from the proposed Development, support coastal/wetland species, and have no suitable habitat or plausible impact pathways linking them to the Site;
- Garron Plateau Ramsar and ASSI: While upland in character, the distance (>15 km) and lack of habitat connectivity means there will be no impact; and

Lough Neagh and Lough Beg SPA / Ramsar (all species except golden plover): The proposed Development is located within an upland area that lacks aquatic, estuarine, or arable habitats. As such, the Site is considered unsuitable for the majority of qualifying species associated with this designation, including swans, ducks, grebes, coot, and terns, which are typically dependent on lowland waterbodies and wetland habitats. These species are therefore proposed to be scoped out of further assessment. No black-headed gull and mew gull (two qualifying gull species of the Ramsar site, occurring in national important numbers) flights, and only a very limited number of lesser black-backed gull flights (qualifying species of the Ramsar site, occurring in national important numbers), were recorded during field surveys so effects on these gull species are also proposed to be scoped out of further assessment. Golden plover, a qualifying species of the SPA/Ramsar, is known to use upland habitats during the winter and passage periods and was cited in the original ES (Proposed Wind Farm, Wolf Bog, Tildarg, Kells, Co. Antrim. Volume 1 Environmental Statement. B9 Energy and RES, April 2004) as the only species of concern. It will therefore be considered further in relation to potential functional connectivity.

## 6.4. Proposed Methodology for Further Assessment

The further assessment of potential significant effects on ornithological receptors will be undertaken in accordance with relevant guidance and best practice. The approach will include:

- Consideration of ornithological receptors and sensitivities as defined in **Section 6.2**, with updates as necessary to reflect the final design of the proposed Development and any additional survey findings;
- A desk-based review of existing ornithological data and literature, including relevant datasets from CEDaR, BTO, BirdWatch Ireland, NIEA, and other sources (including historic survey information for the existing Elliots Hill & Wolf Bog Windfarms);
- Baseline surveys undertaken to date (2023 and 2024/25);
- Application of EcIA principles following CIEEM guidelines, alongside NatureScot and NIEA guidance for ornithological assessments at windfarms;
- Consideration of potential cumulative effects in combination with other wind energy developments in the region; and
- The assessment will consider effects across decommissioning/construction, operational, and decommissioning phases and will identify mitigation measures to avoid, reduce, or compensate for significant impacts where necessary.

### 6.4.1. Desktop Studies

A records request will be undertaken with CEDaR to obtain records of protected and notable ornithological species, as well as non-statutory designated sites, within 2 km of the proposed Development. In the unlikely event that these data identify the potential for additional significant effects beyond those already scoped, relevant consultees (e.g., NIEA Biodiversity and Wildlife Team) will be consulted to agree any revisions to the scope of assessment.

### 6.4.2. Field Surveys

Field surveys (Avian Ecology, 2023; Avian Ecology, 2025) have been completed in accordance with methodologies outlined in NatureScot (2025a) guidance and as agreed with Biodiversity and Wildlife at NIEA, via consultation. NIEA confirmed that one year of ornithological surveys would be applicable for the proposed Development. The scope of these surveys was informed by a review of key data sources, as listed above. Accordingly, the following surveys have been

undertaken (or are in progress) to confirm the presence and status of relevant baseline ecological features:

- Vantage Point (VP) Surveys: 36 hours completed between April and August 2023 (breeding) and 36 hours completed between September 2024 and February 2025 (non-breeding);
- Moorland Breeding Bird Surveys (MBBS) (walking transects) between April and July 2023; and
- Raptor and owl surveys between April and July 2023.

The surveys focused primarily on 'Target' species which comprised of all Annex 1 and Schedule 1 listed raptors and owls, kestrel (*Falco tinnunculus*), all waders, herons, all ducks, geese and swans (excluding feral species).

Secondary species were those defined as those which do not fall into the above category.

#### 6.4.2.1. Vantage Point (VP) Flight Activity Surveys

A single VP location (at grid ref: J2320396657) has been used to provide visual coverage of the required VP survey area for the proposed Development in accordance with NatureScot guidance (2025a); defined as a 500 m buffer around outermost proposed turbine locations (**Figure 6.2**).

A total of 72 hours of vantage point (VP) survey effort was completed across two survey seasons, comprising 36 hours between April and August 2023 (breeding season) and 36 hours between September 2024 and February 2025 (non-breeding season).

During the breeding season, target species flights included a total of 12 golden plover flights consisting of 1,487 birds and one merlin flight were recorded of a single bird, all in April 2023. A single hen harrier was observed in July 2023. Additional records included five lesser black-backed gull flights (with a peak count of three individuals within one flight), one grey heron (*Ardea cinerea*), and one sparrowhawk (*Accipiter nisus*).

Buzzard (*Buteo buteo*) activity was relatively high, with 27 flight paths recorded between April and August 2023, with up to three individuals observed concurrently. Peregrine *(Falco peregrinus)* was recorded on three occasions (one flight in April and two in May), which appeared to fly within the low-risk zone i.e. low height bands. Snipe was recorded in a single flight in April. Seven kestrel flights were observed of a single bird between April and July 2023.

During the non-breeding period (September 2024 to February 2025), the same VP location was used. Overall flight activity was significantly lower. Other notable records include a single snipe flight (peak of three individuals) and one kestrel flight between October and November 2024. Raven (*Corvus corax*) was recorded 15 times, and sparrowhawk once. Buzzard flight activity was reduced in comparison to the breeding season, with a total ten flights recorded between August 2024 and January 2025.

#### 6.4.2.2. Raptor and Owl Surveys

Dedicated breeding Annex 1 and/or Schedule 1 raptor and owl surveys were undertaken in 2023 with reference to species-specific methodologies outlined in Hardey, J., Crick, H.Q.P., Wernham, C.V., Riley, H., Etheridge, B. & Thompson, D.B.A (2013), as per current industry standard guidance (NatureScot, 2025a).

The breeding raptor and owl survey area has comprised coverage of the Site and accessible areas out to at least 2 km for all raptor and owl species and up to 2.5 km for hen harrier.

A series of search visits were made, staggered across the core breeding season, between April and July.

One SPA qualifying species associated with the Antrim Hills SPA was recorded during the raptor and owl field surveys, merlin. A single male merlin was recorded hunting in July 2023.

Other species of note include:

- Buzzard – A total of 37 observations of single birds and pairs were recorded between April and July 2023. Although no nests were identified within the Site, approximately nine territories were estimated within the 2 km survey area, suggesting likely overlap with the Site;
- Kestrel- Four observations of hunting males and females were made between April and June 2023. One to two territories were estimated within the survey area, though no nests were confirmed; and
- Sparrowhawk- Six sightings of single males and females were recorded between April and July 2023. An estimated one to two territories were identified within the survey area, with no confirmed nesting activity.

#### 6.4.2.3. Moorland Breeding Bird Surveys

The methodology employed followed the Brown and Shepherd (1993) method for censusing upland breeding waders, based upon the recommendations set out in Calladine *et al*. (2009), as recommended in NatureScot guidance (2025a). The methodology is suitable for moorland and open country species including, waders, gulls and some wildfowl species however, incidental observations of any raptors, owls or notable passerines (i.e., Schedule 1, Annex I, BoCCNI red-listed) may also be recorded.

A total of 18 bird species were recorded during the MBBS during 2023. A list of species afforded protection under relevant legislation and/or identified as priorities for conservation due to their rarity or declining populations alongside estimated territories is presented in **Table 6.2**. These include:

- Two species listed on the EU Birds Directive Annex 1 (no breeding territories or nest sites were recorded within the survey area- hen harrier and golden plover);
- Three species listed on Wildlife Order Schedule 1 Part 1:
    - No nest sites were identified within the survey area, however, breeding territories for kestrel (1) and buzzard (1-3) may overlap the Site;
- Four species listed on Northern Ireland Priority Species List:
    - Two cuckoo breeding territories were identified;
- Two species listed as ‘Scarce’ on Irish Rare Breeding Birds Panel (no breeding territories recorded- hen harrier and golden plover);
- One SPA qualifying species associated with the Antrim Hills SPA were recorded during the breeding season, hen harrier. A single hunting male was observed during July 2023. However, no breeding territories or evidence of breeding were noted; and
- Non-breeding golden plover which is a qualifying species associated with Lough Neagh and Lough Beg SPA/Ramsar and Garron Plateau Ramsar (maximum count 182) were recorded on one occasion during April 2023 and were not recorded again thereafter.

***Table 6.2 - Conservation Status And Estimated Territories Of Bird Species Recorded During Moorland Breeding Bird Surveys.***

| Species | Scientific Name | BoCC NI | Irish Rare Breeding Birds Panel | Northern Ireland Priority Species List | Wildlife Order Schedule 1 Part 1 (NI) | Wildlife Order Schedule A1 (NI) | EU Birds Directive Annex 1 | Estimated territories |
|---|---|---|---|---|---|---|---|---|
| **Swift** | *Apus apus* | Red | | x | | | | Non-breeding |
| **Cuckoo** | *Cuculus canorus* | - | | x | | | | 2 |
| **Golden plover** | *Pluvialis apricaria* | Green | Scarce | x | | | x | Non-breeding |
| **Snipe** | *Gallinago gallinago* | Red | | | | | | 1-6 |
| **Hen harrier** | *Circus cyaneus* | Amber | Scarce | x | x | | x | - |
| **Buzzard** | *Buteo buteo* | - | | | x | | | 3 |
| **Kestrel** | *Falco tinnunculus* | Red | | | x | | | 1 |
| **Skylark** | *Alauda arvensis* | Amber | | | | | | 41 (21) |
| **Starling** | *Sturnus vulgaris* | Amber | | | | | | (8-10) |
| **House sparrow** | *Passer domesticus* | Amber | | | | | | 3-4 |
| **Grey wagtail** | *Motacilla cinerea* | Red | | | | | | 1 |
| **Meadow pipit** | *Anthus pratensis* | Red | | | | | | 55-65 |
| **Linnet** | *Linaria cannabina* | Amber | | | | | | 1-2 |

### 6.4.3. Effects Assessment

The effects assessment will be undertaken in accordance with the CIEEM EcIA guidelines and relevant species-specific guidance. It will take into account:

- Legal protection and conservation status of receptors;
- Sensitivity to disturbance, displacement, and collision;

- Likely magnitude, duration, reversibility, and geographic extent of impacts; and
- Embedded good practice measures and opportunities for mitigation.

The assessment will also inform any future Habitats Regulations Assessment (HRA), where required, for nearby designated sites.

Based on desk study and field surveys undertaken to date (which has provided the baseline conditions on the Site; i.e. at the existing Elliots Hill and Wolf Bog Windfarms), the following receptors are proposed for detailed assessment:

- Hen harrier and merlin (Antrim Hills SPA) – low flight activity observed; considered due to SPA status and proximity (2.6 km);
- Golden plover – a non-breeding flock (1,487 birds) recorded during flight surveys; a qualifying species for multiple SPAs/Ramsar sites;
- Buzzard and kestrel – Schedule 1 species with repeated flight activity and possible overlapping breeding territories; and
- Functionally linked land – for SPA/Ramsar species recorded on or near the Site, where indirect connectivity is possible.

The assessment will identify likely significant effects both alone and in-combination with other projects or plans. A standard EcIA approach will be used, with each ornithological receptor evaluated based on:

- Sensitivity, determined by conservation status, population trends, and legal protections;
- Magnitude of impact, considering spatial extent, duration, frequency, reversibility, and timing; and
- Potential for mitigation or avoidance through embedded design or best practice.

Particular consideration will be given to:

- Collision risk for species recorded flying within rotor-swept height, including buzzard, kestrel, and golden plover, all of which exceeded the threshold of three qualifying flights and will be included in Collision Risk Modelling (CRM). Other species, such as hen harrier, merlin, snipe, and gull species were recorded infrequently and (or) in low densities (lesser black-backed gull) and are proposed to be scoped out of CRM. Peregrine, recorded in three flights, will be reviewed further once final turbine specifications are confirmed.
- Disturbance and displacement of breeding or non-breeding species, particularly SPA qualifying raptors (hen harrier, merlin) and ground-nesting birds (snipe, golden plover), as well as BoCCNI red- and amber-listed passerines that may be sensitive to construction and operational activity.
- Permanent and temporary habitat loss or degradation during construction and decommissioning works, particularly where construction/decommission of new turbines, access tracks, trenching, or vegetation clearance may affect breeding or foraging habitat. No effects of habitat loss are anticipated during the operational phase.
- Indirect effects on designated sites, including potential changes to behaviour or displacement of SPA/Ramsar qualifying species using land beyond designated boundaries.
- Functional linkage with wintering or passage use of the Site by SPA species such as golden plover, which was recorded in a single large flock during April 2023. While no breeding activity was recorded, the Site may serve as foraging habitat for birds roosting at

Lough Neagh and Lough Beg SPA/Ramsar or other regional wetland sites during the non-breeding season.

- Cumulative effects in combination with other operational or planned windfarms in the wider area, particularly in relation to mobile species such as raptors and golden plover that may traverse multiple development footprints.

Where likely significant effects are identified, mitigation measures will be proposed, such as micro-siting, timing restrictions, and habitat enhancement. Any residual effects will be clearly described and assessed. If uncertainties remain, a precautionary approach will be applied, and further targeted survey or modelling may be recommended.

The results of the effects assessment will inform the HRA (where relevant) and guide the final mitigation strategy to ensure compliance with legal protections and policy requirements, including the Birds Directive, the Wildlife (Northern Ireland) Order 1985 (as amended), and relevant Northern Ireland planning policy such as the SPPS.

## 6.5. Summary

A summary of the scoping assessment findings is provided in **Table 6.3**.

***Table 6.3 – Ornithology Scoping Assessment Summary***

| Potential Effect | Proposed Development Phase | Rationale | Further Assessment |
|---|---|---|---|
| **Scoped In** | | | |
| **Hen harrier & merlin (Antrim Hills SPA)** | All phases | SPA qualifying raptors recorded occasionally. Site lies within foraging range (just outside of core range for hen harrier and within core range for merlin) which suggests possible functional linkage. Potential for disturbance, displacement, and temporary habitat degradation. | Yes |
| **Collision risk** | Operation | CRM undertaken for buzzard, kestrel, and golden plover (≥3 qualifying 'at-risk from collision' flights).<br>All other species will not be subject to CRM. However, peregrine should be considered when more data becomes available. | Yes (selected species) |
| **Barrier effect** | Operation | Possible alteration of flight paths for wide-ranging species (e.g. golden plover/raptors) referenced within 'collision risk'. | Yes |
| **Permanent and temporary habitat loss** | Construction, Decommissioning | The construction (and decommission) of the proposed Development will result in the permanent and temporary loss of potentially suitable ornithological habitat. | Yes |
| **Golden plover (Lough Neagh & Lough Beg SPA/Ramsar)** | Construction, operation (non-breeding) | SPA qualifying species golden plover were observed during surveys. Upland habitat supports potential | Yes |

| | | | |
|---|---|---|---|
| | | winter/passage use. Potential for disturbance and temporary habitat loss during construction. | |
| **Scoped Out** | | | |
| **Passerine species (BoCCNI only)** | | Not considered highly vulnerable to windfarm impacts. Will not be assessed individually; assemblage-level effects mitigated through standard best practice. | N/A |
| **Coastal SPAs/Ramsars (Larne Lough, Belfast Lough)** | | >16 km from Site; no suitable habitat; no qualifying species recorded within Site or survey area. | N/A |
| **Straidkilly Wood ASSI** | | >19 km from Site; no relevant ornithological pathway or functional linkage identified. | N/A |
| **Garron Plateau Ramsar/ASSI** | | >15 km from Site; no breeding golden plover observed; no functional connectivity identified. | N/A |
| **Lough Neagh and Lough Beg SPA/Ramsar (all species except golden plover)** | | Upland topography lacks aquatic/estuarine habitats. Site unsuitable for most qualifying species (e.g. swans, ducks, gulls, grebes). Golden plover assessed separately. | N/A |

## 6.6. Questions for Consultees

- Do consultees agree with those features scoped in and out including the designated sites?
- Are there any specific non-wind energy developments that consultees believe should be considered for inclusion within the cumulative impact assessment?
- Do consultees agree that with the exception of golden plover, potentially significant impacts upon statutory designated sites for nature conservation (with ornithological features of interest) can be reasonably precluded?
- Do consultees agree with species considered for CRM (buzzard, kestrel, golden plover and potentially peregrine)?

Do consultees agree that barrier effects are only considered for the three (or four) species that will be subject to CRM (as listed above)?

# 7. Geology, Hydrology and Hydrogeology

## 7.1. Introduction

This chapter considers the potential effects of the proposed Development with respect to hydrology (including flood risk), hydrogeology, geology and peat and sets out the methodology to be undertaken to further assess the likely significant effects during the EIA.

The scoping assessment considers the potential effects of the proposed Development during the following phases:

- Decommissioning of the existing Elliotts Hill Windfarm and Wolf Bog Windfarm;
- Construction of the proposed Development;
- Operation of the proposed Development; and
- Future decommissioning of the proposed Development.

## 7.2. Baseline and Key Sensitivities

### 7.2.1. Existing Land-Use and Topography

The Site is located within a hilly open environment, with the Big Collin summit rising to 353 m Above Ordnance Datum (AOD) to the east. The Site includes the lower, less-well-defined summit of Elliotts Hill which has a top elevation of 300 m AOD and lies to the west of Big Collin and also includes the saddle between the two.

The feasibility study (Envams, June 2023) indicates areas of open ground within the Site containing areas of acid grassland, marshy grassland, bog and heathland habitats. The rough grassland is used for sheep grazing. There is a block of forestry immediately to the west of the Site.

Existing land use also includes the infrastructure associated with operation of the existing Elliots Hill and Wolf Bog Windfarms.

### 7.2.2. Soil and Peat

With reference to the General Soil Map (Second Edition): National Soil (1980), soil coverage of the Site is that of Gleys with Acid Brown Earths, which are wet Mineral and Organic Soils common in areas of high rainfall, where water does not drain away readily.

No peatland is mapped by the Geological Survey of Northern Ireland (GSNI, 2025) (1: 10,000 scale) in close proximity to the Site's western boundary. The NIEA Natural Environment Map viewer (NIEA, 2025) does, however, map thin peatland across much of the Site.

As reported in the initial feasibility report (Envams Ltd, June 2023) the presence of relatively steep ground across the majority of the Site is considered unlikely to support any substantive areas of deep peat (>1 m), but isolated pockets may be present in depressions. It was also reported in this initial feasibility report that the deepest soft ground found during previous probing was 30 cm, with most areas being substantially less than this. The probing completed in order to inform the initial feasibility review was not undertaken on a gridded basis but focused on where deeper peat was considered most likely to be present (including areas downslope to the north of the topographic saddle).

### 7.2.3. Superficial Geology

Till (Diamicton) superficial deposits are mapped by the Geological Survey of Northern Ireland (GSNI, 2025) (1: 10,000 scale) to be widespread in the area local to the Site, although there are areas mapped as being absent of superficial deposits including an area to the south of the Site. These glacial deposits date to the Quaternary period in the Cenozoic era, comprising typically unsorted sediment.

### 7.2.4. Bedrock Geology

With reference to GSNI Bedrock Geology mapping (GSNI, 2025) (1: 10,000 scale), the Site is directly underlain by the Upper Basalt Formation, which dates to the Palaeogene period in the Cenozoic era. Basalt lava from the Upper Formation commonly consists of fine-grained, olivine basalt (olivine tholeiites) composed of plagioclase feldspar, olivine, augite and opaque minerals. The Upper Basalt Formation represents a large portion of the Antrim Lava Group. The Tardree Rhyolite Complex is mapped as being the overlying bedrock deposit across the local area to the west of the Site. This is a Rhyolite lava with subsidiary rhyolitic pyroclastic-rock and forms an important stratigraphic unit between the Lower and Upper Basalt Formations of the Antrim Lava Group.

Several structural faults are mapped by the GSNI in the area local to the Site. The closest of these include a fault mapped immediately to west, at the boundary of the Upper Basalt Formation and Tardree Rhyolite Complex, trending south west – north east. A further fault is mapped in close proximity to the north of the Site, trending north west – south east.

### 7.2.5. Hydrology

The topographic saddle, between Big Collin and Elliotts Hill, is predominantly marshy grassland which drains both to the north and to the south. Small channels, as mapped on GSNI online mapping (GSNI, 2025) are characteristic of marshy areas, and are considered to be potential key pathways for this flow. These channels are understood to be potentially partially incised into the superficial geology. Artificial drainage channels, potentially naturalised, are also considered to be potential flow pathways.

A review of the NIEA Catchment Data Map (DAERA, 2025) indicates that the proposed Development is located within several Water Framework Directive (WFD) river catchment areas, as summarised in **Table 7.1**.

***Table 7.1 – Water Framework Directive River Waterbodies***

| Name | Location Relative to Site | River Waterbodies WFD Ecological Status - 2021 (DAERA, 2025) |
|---|---|---|
| Kells Water (Moorfields) | Northern area, extending northwards | Good |
| Glenwhirry River | North eastern area, extending to the north east | Maximum Ecological Potential |
| Daogh River | East - south eastern area, extending to the south east | Moderate |
| Four Mile Burn | Southern area, extending southwards | Good |
| Connor Burn | South western area, extending to the south west | Moderate |
| Kells Water (Kells) | South western area, extending westwards | Moderate |

With a review of the NIEA Catchment Data Map (DEARA, 2025) and the mapping of watercourses and local geology by the GSNI GeoIndex (GSNI, 2025) the north - north east area of the Site is considered to primarily drain into the catchments of Glenwhirry River and Kells Water, which is a continuation of the Glenwhirry River, and flows in a generally westwards direction before discharging into the River Main further downstream. The River Main in turn discharges into the large freshwater lake named as Lough Neagh. The Lough Neagh is a Special Area of Conservation and a Ramsar site, and the Ramsar site extends to include the lowest reaches of River Main. The Killylane Surface Water Drinking Water Protected Area is consistent with the catchment area for Glenwhirry River.

The south of the Site primarily drains into the catchments of Four Mile Burn, which is a tributary of the Six Mile River, which again eventually discharges into Lough Neagh. The Connor Burn, which has a catchment area within the south western part of the Site, is also a tributary of Kells Water.

The eastern access track to the Site, which is on the downslope of Big Collin, is mapped as being within the catchment area of Doagh River. Review of online mapping (GSNI, 2025) indicates that there are watercourses within this catchment area that are within and directly adjacent to the Site are likely to drain towards an area of open water and marshland referred to as Breckenhill Dam. As the landslope is primarily to the south at this eastern access track it is also considered that there may also be a hydraulic connection to Tildarg Dam to the south east of the Site, primarily via mapped watercourses/drainage channels.

### 7.2.6. Flood Risk

The area has an average annual rainfall of 1355 mm (1991 to 2020), according to the Met Office HadUK gridded data (Met Office, 2025). Flood Mapping for Northern Ireland shows that the Site is located outside of floodplains for river and coastal flooding and is at a low risk of flooding. A concise section within the EIA will consider how the proposed Development may impact surface water run-off and effects on off-site receptors, in accordance with the Northern Ireland Flood Risk Management Plan (Department for Infrastructure, 2021).

### 7.2.7. Hydrogeology

The superficial deposits (Till – Diamicton) underlying the Site are not mapped by the GSNI to be a potential superficial aquifer (GSNI, 2025). The areas defined are based upon a sub-set of superficial deposits as mapped by GSNI at 1: 250 000 scale where the following mapped deposits are considered to have potentially significant permeability and storage properties: glacial sands and gravels, blown sand, raised beach deposits and alluvium. A regional, detailed assessment of the individual deposits in terms of their aquifer potential (aerial extent, thickness, saturated depth etc.) is not available.

The Upper Basalt Formation bedrock underlying the Site is mapped as having moderate potential productivity through fracture flow, classified as a Bm(f) bedrock aquifer (GSNI, 2025). This is where high to moderate yields are possible in places, however a dependence on fracture flow makes poorer yields possible.

No known springs have been identified from an initial desktop review of the 2004 Wolf Bog Wind Farm Environmental Statement (Wolf Bog Wind Farm Ltd, 2004), the 2023 feasibility report (Envams Ltd, June 2023) and OSNI mapping (1: 15,000). However, there are marked issues on mapping available on the GSNI GeoIndex website at the header of several onsite marked watercourses/drainage channels (GSNI, 2025).

### 7.2.8. Groundwater Dependent Terrestrial Ecosystems

Given the likely presence of wet mineral organic soils and bog habitats within the proposed Development, it is considered that there is the potential for groundwater dependent terrestrial ecosystems (GWDTEs) to be present. These would be identified by the National Vegetation Classification (NVC) survey proposed as part of further assessment of ecology during the EIA (**Chapter 5**).

### 7.2.9. Designated Conservation Sites

There are no designated conservation sites within the footprint of the Site.

The nearest site designated for nature conservation is the Antrim Hills SPA which is designated on account of its internationally important breeding hen harrier Circus cyaneus and breeding merlin Falco columbarius populations. This SPA is located c.2.5 km to the north and 4 km to the east of the Site at its closest point. However, it is considered not to be in direct hydraulic connection with Site owing to being hydraulically upgradient of watercourses present between its location and the Site.

The Sandy Braes Area of Special Scientific Interest (ASSI) which is located c.1 km to the west of the Site is a designated site for geological interests. Likewise, Tardree Quarry c.3.5 km to the south west is designated as an ASSI for geological interests.

The Antrim Coast and Glens AONB is located c.2 km to the east of the Site at its closest point and is protected for its scenic properties.

As aforementioned in **Section 7.2.5** the Lough Neagh, a large freshwater lake c.12.5 km to the south west of the Site, is designated as an ASSI, SPA and Ramsar site for a range of ecological interests. The proposed Development will incorporate appropriate management and mitigation measures to ensure that there would be no impact on water conditions supporting this conservation site. In the unlikely event of a pollution event any potential pollutants would be subject to natural attenuation and dilution processes, such that any impact would be negligible.

### 7.2.10. Abstractions

There are no properties situated within the Site boundary, however there are several properties to the south, west, east and north of the Site, which could host Private Water Supplies (PWS) potentially within hydraulic connection to land within the Site. It is proposed that the presence of PWS be confirmed through consultation with M&EABC Environmental Health department and PWS owners (if required) during the EIA.

An initial review of abstraction licences available online (DAERA, July 2023) indicates that there are unlikely to be licenced groundwater abstractions within a 2 km radius of the Site, although further review during the EIA to confirm would be appropriate.

### 7.2.11. Future Climatic Condition

Given the nature of the terrain and distance from any major urban areas, any future land use change from its current rural nature is unlikely over the lifespan of the proposed Development. The potential impacts of other developments upon hydrology, hydrogeology, geology and peat would be considered in a cumulative assessment.

The conditions at the Site would be affected by the likely influence of climate change in the future, which could affect the amount and intensity of rainfall, and temperature and evapotranspiration. The UK Climate Projections 2018 (UKCP18) produced by the Meteorological Office Hadley Centre[13] provide information regarding the potential future climate in Northern Ireland. Representative Concentration Pathway (RCP) 8.5 reflects a high emissions scenario and is considered a possible, but conservative, emission scenario suitable for evaluating the climate resilience of long-lifetime projects. The central estimate (50th percentile) under the RCP8.5 scenario predicts an increase in annual mean temperature of 2.5°C by the end of the 2050s. The RCP8.5 scenario also has a central estimate of a between 10-20% decrease in summer precipitation, with an increase of 10% in winter precipitation, by the end of the 2050s. This could change the hydrological characteristics of the Site and wider catchment areas over time.

[13] UK Climate Projections (UKCP): Met Office. Available at: UK Climate Projections (UKCP) - Met Office [Accessed in April 2025]

### 7.2.12. Key Sensitivities

In summary, the following key sensitive receptors have been identified as requiring further assessment on the basis of their value/sensitivity and the magnitude of change to which they would be exposed to:

- the underlying bedrock aquifer;
- natural surface and near-surface water drainage patterns feeding into several WFD river catchments, and downgradient surface water bodies and potential drinking water protected areas;
- localised conditions supporting discrete areas of peatland/bog and potential GWDTEs; and
- Potential PWS/licenced abstractions in close proximity to the Site.

## 7.3. Potential Effects Assessment

### 7.3.1. Scoped In Effects

Given the baseline conditions described above in **Section 7.2**, a range of potentially significant effects may arise from the proposed Development. These have been scoped into the EIA for more detailed assessment. It is noted that the term “decommissioning” is used to refer both to the removal of the existing Elliots Hill and Wolf Bog Windfarms, and to the future decommissioning of the proposed Development. The latter is expected to follow a broadly similar approach to that outlined in **Section 2.3.1**. Effects on the water environment and peat are anticipated to be comparable, however, as only five repowered turbines would require decommissioning in the future the associated effects are likely to be less significant, and at most equal, to those arising from the decommissioning of the current windfarms (which has a total of 15 turbines) and construction activities. Potentially significant effects are provided below:

- Alteration of surface water and overland flow regimes - there is the potential to alter in-channel or overland flow regimes through excavations, exposure of bare earth or rock, alteration to artificial drainage, construction of turbine foundations, and the construction of watercourse crossings (if required) and areas of hardstanding and track. This potential effect includes concentrating and potentially diverting flows from one catchment to another;
- Alteration of the groundwater flow regime - there is potential to permanently alter or disrupt shallow groundwater flow, in particular through the installation/subsequent removal of tracks and hardstanding, the implementation of drainage measures, and the excavation of turbine foundations and pouring of concrete. The temporary lowering of the water table from dewatering activities potentially associated with the decommissioning/ construction phases of the proposed Development also has the potential to temporarily alter or disrupt groundwater flow. Interruption of groundwater flow could potentially reduce the supply of groundwater to any identified GWDTE thereby causing an alteration/change to its inherent quality or quantity and/or the physical or biological characteristics;
- Erosion and sediment transport - there is the potential to increase erosion and transport of sediment to watercourses as a result of vegetation and soil stripping, excavations, watercourse crossings and dewatering activities (if required). Potential effects include direct and indirect effects on aquatic ecology and fluvial morphology of vulnerable receptors;
- Water quality impacts - there is the potential to impact on receiving soils, groundwater and watercourse quality through the release of contaminated water and stored chemicals used on-site during construction works (including the pouring of concrete for turbine

foundations). Potential effects include those on water quality and indirect effects on aquatic ecology of vulnerable receptors (including any identified GWDTE); and

- Degradation of soil and peatland - there is the potential for the loss/degradation of any carbon rich soil/peat during decommissioning, and construction of the proposed Development. These impacts may arise from the excavation, storage and transportation of peat, which may impact its structural integrity and its ability to act as a store of carbon. This may also include indirect and localised impacts such as drying of the peat and resultant oxidation through changes in shallow groundwater flow or ineffective peat reinstatement practice.

Cumulative effects for developments within the study area will be assessed in the EIA, with primary considerations relating to flood risk to off-site receptors and potential water quality impacts.

The presence of any water supply abstractions will be confirmed in consultation with M&EABC and relevant consultees, and further assessment (if required) of potential environmental effects undertaken during the EIA.

### 7.3.2. Scoped Out Effects

From the desktop review undertaken, it is proposed to scope out the following from further assessment during the EIA:

- A detailed Flood Risk Assessment - based on a review of NI Flood Maps and noting the elevated location of the Site, it is considered that flood risk is generally low and highly unlikely to be increased as a result of the proposed Development, including flood risk offsite. As such, it is considered that a concise section within the EIA will sufficiently consider how the proposed Development will impact surface water run-off and effects on any potential offsite receptors and a detailed Flood Risk Assessment can be scoped out of further assessment;
- Designated Conservation Sites - there are no designated conservation sites that are considered to be in direct hydrological connection with the proposed Development. It is therefore considered appropriate that designated conservation sites can be scoped out from further assessment; and
- Designated Geological Sites – there are no designated geological conservation sites within the site boundary, and it is considered that the proposed Development will have no impact upon any offsite designated geological sites due to both the nature of proposed works and the distance to any such receptors.

## 7.4. Proposed Methodology for Further Assessment

### 7.4.1. Desktop Studies

As part of the EIA the following desktop studies are proposed:

- Obtaining details of PWS and public abstractions within a 2 km radius of the Site boundary via appropriate data requests. Similarly, relevant rainfall and hydrological datasets (where available) from the appropriate regulator/environmental body would be obtained;
- a review of publicly available online data sources for further details on soils, geology and the hydrological environment within the Site and a surrounding 2 km study area; and
- review of design layout and potential constraints in relation to the water environment and peat sensitivities during the EIA.

Noting the scale and type of the proposed Development a wider study area extending 2 km from the Site boundary used for the identification of hydrological and hydrogeological receptors whose condition may be impacted by the proposed Development (including cumulative effects) is considered appropriate. Additionally, the assessment will take into account potential downstream connectivity to areas extending beyond this, where appropriate.

The study area, in respect of potential direct impacts on peat and carbon-rich soils, will consider land within the Site only.

Throughout the EIA process and following further survey work and feedback from the consultation process it may be that the proposed methodology presented further develops. Should any changes occur that are likely to have a significant impact on any particular receptors, these will be included within the EIA.

### 7.4.2. Field Surveys

Initial site investigations and a desk-top review indicate that peat is unlikely to be a major constraint for the proposed Development. Nevertheless, further Phase 1 Peat Surveys are recommended to confirm this. A Phase 1 Peat Survey would consist of a coarse grid of peat probe points (100 m intervals) across the entirety of proposed Site. If peat conditions indicate that peat is likely to be a constraint to development, further detailed assessments, including a detailed Phase 2 Survey would be warranted.

NVC/habitat surveys (**Chapter 5**) will be employed to identify potential GWDTE habitats within 100 m of excavations shallower than 1 m, or within 250 m of excavations deeper than 1 m. Further assessment will be undertaken to define the groundwater dependence of these habitats, so that the design layout takes account of the locations of the most sensitive habitats and either avoids them or suitable mitigation is identified.

New or altered watercourse crossings, if any, associated with the proposed Development will be minimised as far as practicable. A site walkover would be completed (likely in tangent with the recommended Phase 1 Peat Survey and/or NVC/habitat survey work) to determine the width and depth of any watercourses that require crossing, in order to suitability inform any development/construction.

### 7.4.3. Effects Assessment

Following completion of the baseline studies appropriate guidelines will be used to determine the significance of effects. This will involve:

- determination of the importance of each identified receptor;
- assessment of effects to the identified receptors and/or resources, using a defined importance threshold with reference to ecological processes and functions as deemed appropriate;
- determining the extent, magnitude, duration, timing and frequency of the impacts;
- assessing the potential for impact reversibility;
- determining the level of confidence in the above impact predictions;
- identification of likely significant impacts in the absence of mitigation; and
- the identification of cumulative and residual impacts following implementation of mitigation.

It is noted that professional judgement will be applied in determining the significance of any impacts.

## 7.5. Summary

A summary of the scoping assessment findings is provided in **Table 7.2**.

***Table 7.2 - Geology, Hydrology and Hydrogeology Scoping Assessment Summary***

| Potential Effect | Proposed Development Phase | Rationale | Further Assessment |
|---|---|---|---|
| **Scoped In** | | | |
| **Chemical Pollution and Sedimentation** | Decommissioning, Construction, and Operation of proposed new turbines | An appropriate level of assessment will need to be considered to understand the potential impacts of the proposed Development on water quality and potential pollution (chemical and sedimentation). | A desktop review of potential pollution pathways (with reference also to available baseline water quality) to identify potential receptors and inform appropriate mitigation measures. |
| **Existing Surface Water Drainage Patterns** | Decommissioning, Construction, and Operation of proposed new turbines | An appropriate level of assessment will need to be considered to understand the potential impacts of the development in relation to the alteration of existing drainage patterns following confirmation of the site design. | A desktop review of the Site's topographical and hydrological environment, detailing the likely impact on any identified receptors and the requirement for any mitigation. A site walkover to determine the location of any required watercourse crossings. |
| **Impact on Groundwater Table and Flow Regime** | Decommissioning, Construction, and Operation of proposed new turbines | An assessment of hydrogeological environment of the Site is required to determine potential flow pathways for pollution and hydraulic connectivity of the development to any potential receptors, including GWTDE (if identified). | A desktop review of the Site's hydrogeological environment, and potential receptors.<br><br>Habitats classified as GWTDE within a 100 m radius of all excavations shallower than 1 m and within 250 m radius of all excavations deeper than 1 m will be scoped into further assessment.<br><br>If temporary dewatering activities are required for any site excavations it would be ensured that there is adherence to appropriate guidance and activity permits. |
| **Increased Run-off and Flood Risk** | Decommissioning, Construction, and Operation of proposed new turbines | An appropriate level of assessment will need to be considered to understand the potential impacts of the development in relation to increased run-off (rates and volumes) and associated flood risk following confirmation of the site design. | A qualitative flood risk assessment relative to on-site and downstream flood risk will be undertaken as part of the EIA. |
| **Degradation of Public or Private Water Supplies** | Decommissioning, Construction, and Operation of proposed new turbines | An appropriate level of assessment will need to be considered to understand the potential impacts of the | Consultation with the local authorities and residents (if required) to confirm the presence of any PWS within a 2 km radius of the Site. |

| | | | |
|---|---|---|---|
| | | development on water quality and source availability for any PWS identified within the study area. Further details of public or PWS is required to confirm supply arrangements and/or mitigation requirements. | A risk assessment will focus on any abstractions within a 100 m radius of all excavations shallower than 1 m and within 250 m radius of all excavations deeper than 1 m.<br><br>Should no public or private water supply be identified within 2 km of the site then effects on public abstractions or PWS will be scoped out. |
| **Degradation of Soils and Peat** | Decommissioning, Construction, and Operation of proposed new turbines | Although initial targeted assessment indicates that extensive peat coverage at the Site is unlikely further assessment is considered appropriate for peat impact minimisation. This will identify areas susceptible to peat slide, areas of active and inactive peatland, assist in the final construction details, and assess potential effects on relevant hydrological and ecological receptors. | Desktop review of any available peat coverage, type and depth details relevant to any previous assessments at the Site.<br><br>Phase 1 peat survey in line with relevant guidance to allow for peat slide risk assessment; and identification of peat management measures.<br><br>Information on peat will also be utilised for production of a GWDTE assessment, if required. |
| **GWTDE** | Decommissioning, Construction, and Operation of proposed new turbines | An appropriate level of assessment will need to be considered to understand the potential impacts of the proposed Development on water quality and source availability for any GWTDE identified within the study area. | NVC/habitat surveys to determine the presence of any GWTDE within the Site. |
| **Scoped Out** | | | |
| **Designated Conservation Sites** | Decommissioning, Construction, and Operation of proposed new turbines | There are no designated conservation sites within the proposed Development area or within a 5 km radius that are considered to be in direct hydrological connection with the Site. | n/a |
| **Designated Geological Sites** | Decommissioning, Construction, and Operation of proposed new turbines | It is considered that the proposed Development will not impact upon off-site designated geological sites. | n/a |
| **Detailed Flood Risk Assessment** | Decommissioning, Construction, and Operation of proposed new turbines | With reference to available flood maps and the nature of the proposed Development it is considered that a concise section within the EIA will sufficiently consider how the proposed Development | n/a |

| | | | |
|---|---|---|---|
| | | will impact surface water run-off and effects on any potential offsite receptors. | |

## 7.6. Scoping Questions for Consultees

- Do consultees agree with the proposed methodology and scope of the geology, hydrology and hydrogeology assessment?
- Do consultees have any comment regarding the likely significant effects scoped in for further assessment during the EIA or the potential effects scoped out?
- Are there any developments or infrastructure schemes which should be taken into account when considering potential cumulative impacts?

# 8. Landscape and Visual Amenity

## 8.1. Introduction

This chapter outlines the potential effects of the proposed Development on landscape and visual receptors and sets out the methodology to be undertaken to further assess the likely significant effects during the EIA.

The purpose of the landscape and visual impact assessment (LVIA) is to identify and record the potential significant effects that the proposed Development may have on physical elements of the landscape; landscape character; landscape areas that have been designated for their scenic or landscape-related qualities; and views from various locations such as settlements, routes, hilltops and other sensitive locations. The potential cumulative effects that may arise from the removal of the 15 operational wind turbines, and the addition of the proposed Development to other existing and consented renewable energy developments are also considered.

The LVIA considers the potential effects of the proposed Development during the following phases:

- Decommissioning of the operational turbines and existing site infrastructure;
- Construction of the proposed five new turbines up to 150 m blade tip height;
- Operation of the proposed Development; and
- Future decommissioning of the proposed Development.

## 8.2. Baseline and Key Sensitivities

### 8.2.1. The LVIA Study Area

We propose a landscape and visual assessment within a 30 km radius of the turbines as a Wider LVIA Study Area. It is anticipated that a Detailed LVIA Study Area would be identified within c.10 – 15 km radius, to focus on predicted significant landscape, visual and cumulative effects.

### 8.2.2. The Site and Immediate Surroundings

The Site is located on Elliotts Hill (300m AOD) to the west of the larger summit of Big Collin (350m AOD), ~10 km to the southeast of Ballymena and ~7 km northwest of Ballyclare.

The Site is adjacent to Collin Road (B94), and north of Tildarg Road. The landscape character and landscape elements of the site include a medium to large scale open, upland landscape used for grazing.

The operational windfarm is a part of the current landscape and visual baseline of the Site and surrounding area. The local landscape is influenced by man-made development, including the existing Elliots Hill and Wolf Bog Windfarms' operational wind turbines, commercial forestry, telecoms masts and overhead power lines. There are a number of residential properties within 750 m of the site boundary.

The Site and immediate surrounding landscape is dominated by the existing operational turbines of Elliots Hill and Wolf Bog Windfarms. The landscape and visual assessment will consider the current landscape character and elements which include the existing turbines, with a planning permission in perpetuity. Therefore, any future development through repowering of the Site, would result in a landscape 'baseline' which includes operational wind turbines, and would continue to include wind turbines through the consent of the proposed Development, and there would be no return to a 'restored' landscape.

### 8.2.3. National and Local Landscape Designations

The Site is within an undesignated landscape.

The Antrim Coast and Glens AONB is situated c.2 km east of the Site at its closest point. This is a national designation, and the landscape is protected for its scenic value. The LVIA will consider the potential indirect landscape effects upon the special characteristics of the AONB, and the visual effects on views from within and towards the designated landscape.

### 8.2.4. Landscape Character

An appraisal of the baseline landscape character is considered at three levels:

- National / regional landscape character areas identified within the Northern Ireland Regional Landscape Character Assessment (NIEA, 2015);
- Regional landscape character types (LCTs) in relation to landscape character profiles identified within the NIEA Supplementary Planning Guidance (SPG) to accompany PPS 18 Wind Energy Development in Northern Ireland Landscapes (updated 2019); and
- The landscape character of the Site and its immediate context, based on field observations.

Within the LVIA wider Study Area of 30 km radius there are 38 LCTs. The LVIA undertaken during the EIA will consider the potential direct and indirect landscape effects of the proposed Development where there is predicted visibility and also landscape value, landscape sensitivities, landscape capacity and potential cumulative landscape effects.

### 8.2.5. Visual Receptors

The visual assessment will draw from a Zone of Theoretical Visibility (ZTV), site visits and viewpoint analysis and assesses the potential visual effects on views and visual amenity likely to be experienced by receptors (people) within the landscape as follows:

- Views from residential properties and settlements;
- Views from designated / valued landscapes;
- Views experienced while travelling through the landscape (recreational road users, walkers, horse riders, cyclists for example); and
- Views from tourist and recreational destinations.

Visual effects would be experienced by the people who live and work in the area, along with those enjoying recreational activities in this area or simply passing through. Whilst it is people who are the actual receptors of visual effects, it is the places they may occupy, and from which the proposed Development may be seen.

### 8.2.6. Residential Receptors

The landscape of the Detailed Study Area of 10 – 15km radius is lightly settled. Particular attention will be dedicated to the proposed Development's impact on local residents because they would experience the windfarm from different locations, at different times of the day, usually for longer periods of time, and in different seasons.

The visual assessment will include a Residential Visual Amenity Assessment (RVAA) from individual residential properties within 2 km of the proposed Development. Properties are assessed from publicly accessible areas only, and access along private driveways would be respected. In this instance, the assessment of potential visual effects on views from residential properties would be prepared using aerial photographs and views of the property from the wider landscape.

### 8.2.7. Settlements

The closest settlement of Glenwherry is located ~2.8 km north east, Tildarg is located ~3 km south east, and Moorfields is located ~4.2 km north west of the proposed Development. The larger settlement of Ballymena is located 10 km to the north west, and Ballyclare ~7 km south east.

### 8.2.8. Transport

It is important to take account of how the proposed Development would be experienced from the surrounding road network. The visual assessment will consider the potential visual effects likely to be experienced by people travelling through the landscape on main roads and the local road network. Views will vary depending on proximity to the road, the mode of transport, the angle of view, and intervening landscape features.

Routes which pass within 15 km of the proposed Development include:

- M2;
- A36;
- A26;
- A42;
- A57;
- B94;
- B53;

- Collin Road;
- Tildarg Road;
- Doagh Road;
- Ballymeana Road;
- Browndod Road; and
- The minor road network.

### 8.2.9. Recreational Routes

Visual impacts on tourists, or those participating in recreation activities, may be brief in nature by passing through the area by road, on horse, foot, or bike, their sensitivity to landscape and visual change is high because their purpose/activity is to appreciate landscape and surroundings.

The visual assessment will consider views from recreational receptors within 30 km of the proposed Development and focusing on those within 10 - 15 km radius of the proposed Development within a Detailed Study Area (please refer to **Section 8.4.2**).

Nearby recreational receptors promoted recreational routes within the Detailed Study Area include:

- Tardree Forest Walk;
- Slemish;
- Glenarm to Ballynure incorporating Antrim Hills Way;
- Antrim Hills Way; and
- Hill top locations at Big Collin (adjacent to the Site) and Drumadarragh to the south, Wee Collin to the east and Douglas Top to the north.

### 8.2.10. Key Sensitivities

In summary, the following key sensitivities have been identified as requiring further assessment:

- Effects during decommissioning of the existing turbines would be similar to that of the construction phase. Potential construction impacts would be limited to the site and immediate surrounding area for the duration of the construction phase. Visual effects may extend as construction nears completion where larger installation equipment, cranes, would be required, however these visual effects would be temporary.
- Operational effects will form the basis of the LVIA. Initial studies, analysis and receptor selection is undertaken in line with the operational phase of the proposed Development.
- Potential effects on local landscape character, including cumulative effects particularly on the host landscape character;
- Potential effects on the special qualities of the Antrim Coast & Glens AONB;
- Views from key visual receptors including from key routes and settlements within 10 km radius and nearby residential properties within 2 km radius;
- Views from recreational routes / hill top locations; and

- Static and sequential cumulative effects on uses of the B53 and B94 roads and the local road network.

## 8.3. Potential Effects Assessment

### 8.3.1. Scoped In Effects

Based on baseline conditions described above, it is anticipated that the following potentially significant effects are scoped into the EIA for further detailed assessment:

- Landscape character and landscape designations within 30 km of the proposed Development. A preliminary assessment will accompany the LVIA to ascertain which landscape character receptors will be assessed in detail, based on a review of the ZTV and ground truthing in the field as part of the Site assessment to confirm where there is intervisibility of the existing and proposed turbines at the Site. Where there is no visibility within a landscape character area/ landscape designation, this will be scoped out of an LVIA;
- Visual effects on representative viewpoints selected to illustrate the view from recreational routes / locations / residential areas;
- Visual effects on views from properties (within a 2km radius of the proposed Development), and settlements within 10 -15km radius;
- Static and sequential visual effects on views from the local road and main road network; and
- Visual effects associated with aviation warning lighting on the repower turbines.

### 8.3.2. Scoped Out Effects

From the desktop review undertaken, it is proposed to scope out the following from further assessment during the EIA:

- Landscape Character and designations outwith 30 km of the proposed Development.;
- Those LCTs outwith the ZTV, and within 30 km of the proposed Development;
- Those landscape designations outwith the ZTV, and within 30 km of the proposed Development would be scoped out of the LVIA. Where the ZTV indicates limited / fragmented visibility of the proposed Development, those areas would be reviewed in the field, and where there would be no visibility the landscape designation would be scoped out of the LVIA;
- Those heritage assets outwith the ZTV and those reviewed in the field where there would be no visibility from the asset (in consultation with the Cultural Heritage assessors) would be scoped out the LVIA; and
- Effects on visual receptors with limited or no visibility of the proposed Development. A preliminary assessment will accompany the LVIA to ascertain which visual receptors are assessed in detail.

## 8.4. Proposed Methodology for Further Assessment

Further assessment will consider direct and indirect effects on the landscape resource / landscape elements, landscape character and any designated landscapes. It will examine the nature and extent of effects on existing views experienced by the local population and visitors to

the area. The LVIA will also consider cumulative effects i.e., the incremental effects of the proposed Development in combination with other renewable energy developments.

### 8.4.1. Legislation, Policy and Guidance

The LVIA process will inform modifications and refinements to the layout design and will be undertaken following the approach set out in Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA3). The assessment will also draw upon current good practice guidance published by NatureScot. It will also include a review of policies of relevance to the LVIA and will be informed by current guidance including:

- Guidelines for Landscape and Visual Impact Assessment (GLVIA3), prepared by the Landscape Institute & IEMA (2013);
- Notes and Clarifications on aspects of the 3rd Edition Guidelines on Landscape and Visual Impact Assessment (GLVIA3) LITGN-2024-01 (August 2024);
- Visual Representation of Development Proposals, Technical Guidance Note, The Landscape Institute (2019);
- Guidance on Aviation Lighting Impact Assessment, NatureScot (2024);
- Residential Visual Amenity Assessment (RVAA), Technical Guidance Note 2/19, The Landscape Institute (2019);
- Pre-application guidance for onshore wind farms, NatureScot (2024);
- Guidance for Assessment of Effects on Special Landscape Qualities (AESLQ) (2020), NatureScot;
- Assessing landscape value outside national designations (2021) The Landscape Institute; Technical Guidance Note 02/21 (2021);
- Siting and Designing Windfarms in the Landscape, NatureScot (2017);
- Guidance: Assessing the Cumulative Impact of Onshore Wind Energy Developments, NatureScot (2012);
- Visual Representation of Wind Farms, Version 2.2, NatureScot (2017);
- NatureScot and The Countryside Agency (2002) Landscape Character Assessment Guidance for Scotland and England;
- Nature Scot (2021) Assessing the Cumulative Impact of Onshore Wind Energy Developments;
- Northern Ireland Assembly Policy REI of PPS18 – Renewable Energy;
- SPSS and any subsequent publication / update of this policy published in 2025 – 2026; and
- Northern Ireland Environment Agency (NIEA) Supplementary Planning Guidance to accompany PPS 18 Wind Energy Development in Northern Ireland Landscapes (Last updated 18th October 2019).

Where certain guidance documents have been produced in relation to Scottish onshore windfarm projects, i.e. not strictly applicable to Northern Ireland windfarm projects, these will be reviewed as part of the EIA process and due consideration will be given to how this guidance is applied to the proposed Development LVIA.

### 8.4.2. Study Area

Paragraph 5.2 within the Guidelines for Landscape and Visual Impact Assessment – Third Edition (GLVIA3) states that "*The study area should include the site itself and the full extent of the wider landscape around it which the Project may influence in a significant manner*".

A Wider LVIA Study Area would be identified and then refined to a Detailed LVIA Study Area to avoid a disproportionately large LVIA Study Area. Landscape character, designated areas and visual receptors would be reviewed in the field, and where there would be no visibility they would be scoped out of the LVIA. This will allow the LVIA to focus on those landscape and visual receptors which may experience significant effects by the proposed Development.

Reference will be made to NIEA Supplementary Planning Guidance to accompany PPS 18 Wind Energy Development in Northern Ireland Landscapes (2019) on the good practice requirements for LVIA (Table 6, page 52 – 55) which advises that the study area or ZTV for wind turbines is 30 km from the outer most wind turbine positions.

The following LVIA Study Areas are proposed:

- Wider LVIA Study Area – 30 km radius
- Detailed LVIA Study Area – 10 - 15 km radius; and
- Cumulative LVIA Study Area – 30 km radius.

  The study area for the LVIA will be determined by a combination of professional judgement, using ZTV figures and site assessment work.

### 8.4.3. Data Sources

**Table 8.1** summarises the key literature and data sources used to define the receiving environment and inform this LVIA EIA Scoping assessment.

***Table 8.1 – Key Sources of Landscape and Visual Receptors Data***

| Source | Summary | Coverage |
|---|---|---|
| Mid & East Antrim Borough Council | Planning Policy Documents, and Local Plans. Landscape character assessment reports. Please refer to **Section 4.2** for the list of planning policy documents. | Includes the Council administrative areas |
| Department of Agriculture, Environment & Rural Affairs | Antrim Coast and Glens AONB \| Department of Agriculture, Environment and Rural Affairs Description of special qualities | AONB administrative boundary |
| Causeway Coast & Glens Heritage Trust | Antrim Coast & Glens AONB Northern Ireland information on the Antrim Coast & Glens AONB Management Plan 2020-2030 | AONB administrative boundary |
| Walk NI | Home - WalkNI Online resource for promoted recreational routes with descriptions and mapping detail. | Northern Ireland |
| Ordnance Survey Maps | 1:50,000 and 1:25,000 and 1:10,000 scale mapping | Northern Ireland |
| Aerial photography and Google Earth imagery | Aerial imagery to identify landscape features, landscape setting and street view imagery where available | International |

### 8.4.4. Desktop Studies

As part of the LVIA desktop reviews of the following will include the following sources:

- Existing baseline landscape character studies;
- Mapping and ZTVs to determine the visual receptors ahead of field assessment;
- Relevant landscape planning policy;
- Special qualities of the Antrim Coast & Glens AONB;
- Promoted recreational routes and hill walking routes within the Wider and Detailed Study Areas;
- Recreational receptors and promoted visitor attractions in the Wider and Detailed Study Areas; and
- Aerial photography to assess residential properties where there is no permitted access from publicly accessible locations.

### 8.4.5. Viewpoint Selection

A preliminary viewpoint list for the LVIA of the proposed Development is shown in **Table 8.2** and locations illustrated on **Figure 8.1**. The final list will be established through fieldwork and the scoping process and in agreement with the M&EABC and statutory consultees.

The preliminary viewpoints were selected to represent sensitive visual receptors with the potential to undergo significant effects based on a feasibility study (Envams, June 2023) analysis., and a review of the ZTV and those viewpoints selected for the existing and consenting wind farm developments within the local landscape. They were also selected to represent landscape receptors and with consideration of the potential for cumulative effects to arise. This list will be reviewed and updated after field analysis and in receipt of any feedback to this Scoping Report.

Baseline landscape context photographs will be prepared in accordance with industry leading NatureScot & Landscape Institute guidance and presented at a 90-degree horizontal angle of view.

***Table 8.2 – Preliminary Viewpoint Locations***

| Viewpoint No. | Viewpoint Name | Landscape & Visual Receptors |
|---|---|---|
| 1 | Minor Road South of Site | This viewpoint is in close proximity to the proposed Development selected to represent the view from nearby residential properties and local road-users. The viewpoint is located within the Tardree Upland Pastures LCT. |
| 2 | A36/B94 junction north of site | This viewpoint is located at a car park location at the junction of the A36 and B94. This provides a view from an elevated location that gains an overview of the Site and a cumulative viewpoint with Castlegore/Whappstown windfarm. The viewpoint is located within the Tardree Upland Pastures LCT. |
| 3 | Minor Road in AONB | This is a viewpoint location within the AONB, at a junction of the A36 and B94. This provides a view from an elevated location that gains an overview of the Site and a cumulative viewpoint with the consented Castlegore/Whappstown Windfarm. The viewpoint is located on the boundary of the Tardree Upland Pastures LCT and Larne Basalt Moorland LCT. |

| | | |
|---|---|---|
| 4 | Antrim Hills Way, near Skerrywhirry | This viewpoint is representative of view from the Antrim Hills Way promoted recreational route. The viewpoint is located within the Larne Basalt Moorland LCT. |
| 5 | Moorfields, A36 road | This viewpoint is representative of view from the settlement of Moorfields, on the B53 road, and represents the view from nearby residential properties and local road-users. The viewpoint is located on the boundary of the Tardree and Six Mile Water Slopes LCT and Ballymena Farmland LCT. |
| 6 | Tildarg Road | This viewpoint is representative of the views from a minor road west of the Site and illustrates a landscape baseline view of powerlines within the local landscape. The viewpoint is located within the Tardree Upland Pastures LCT. |
| 7 | Tardree | Tardree Forest Loops is a promoted recreational route. This viewpoint is representative of potential views from this route, although with the tree cover, visibility is likely to be limited. The viewpoint is located within the Tardree Upland Pastures LCT. |
| 8 | Browndod Road | This viewpoint is representative of the views from a minor road west of the Site and illustrates a landscape baseline view of powerlines within the local landscape. The viewpoint is located within the Tardree Upland Pastures LCT. |
| 9 | Ballyclare Golf Club | This viewpoint is representative of views from a local recreational resource. Exact locations near the golf club to be determined in the field. The viewpoint is located within the Tardree and Six Mile Water Slopes LCT. |
| 10 | Shaws Hill Property | This viewpoint is representative of the views from a residential property south west of the Site. The viewpoint is located within the Tardree Upland Pastures LCT. |
| 11 | Big Collin | This viewpoint is representative of the views from a hill top location close to the Site. The viewpoint is located within the Tardree Upland Pastures LCT. |
| 12 | Wee Collin | This viewpoint is representative of the views from a hill top location c.5 km to the east of the Site. The viewpoint is located within the Larne Basalt Moorland LCT. |
| 13 | Tardree Mountain | This viewpoint is representative of the views from a hill top location c.4 km to the south west of the Site. The viewpoint is located within the Tardree Upland Pastures LCT. |
| 14 | Tobernaveen Hilll | This viewpoint is representative of the views from a hill top location c.6 km to the south west of the Site. The viewpoint is located within the Larne Basalt Moorland LCT. |
| 15 | Slemish | This viewpoint is representative of the views from a hill top location c.7 km to the north of the site. The viewpoint is located within the Larne Basalt Moorland LCT. |

### 8.4.6. Field Surveys

Field surveys will be carried out to assess potential landscape and visual effects within the 30 km study area. The key aims of baseline fieldwork are to:

- Augment and verify the published descriptions of landscape character with fieldwork observations;
- Undertake an assessment of the quality or condition of baseline landscape and visual resources;
- Identify any significant features and elements in the landscape such as vegetation or built form that would screen the proposed Development and thereby verify or refine the ZTV;

- Visit each viewpoint location identified during the desk study and this Scoping Report, and to microsite each viewpoint location in accordance with good practice guidance and obtain accurate coordinates;
- Undertake photography using a full frame digital single-lens reflex (SLR) camera at each viewpoint location; and
- Identify landscape features and elements that may be altered or removed as a result of the proposed Development.

Fieldwork during the assessment stage will include an assessment of effects on the following receptors:

- Landscape resources including seascape and landscape character, seascape and landscape sensitivity, landscape features and landscape elements;
- Residential receptors;
- Local roads; and
- Footpaths / recreational routes.

We would propose a structured approach to the LVIA of the proposed Development that would allow early engagement with the wider project Development process. The key challenge is to ensure that agreement on viewpoints is secured to allow photography to be taken in conditions of fine weather at the earliest opportunity.

We propose a site assessment within a 30 km radius of the turbines as a Wider LVIA Study Area. It is anticipated that a Detailed LVIA Study Area would be identified within c.10 – 15 km radius, to focus on predicted significant landscape, visual and cumulative effects.

A 2 km radius study area for an assessment of the predicted views from residential properties is proposed.

### 8.4.7. Visualisations

The visualisations will be prepared and will accord with the requirements of NatureScot (Visual Representation of Wind Farms Version 2.2, December 2017). The visualisation locations and types will be discussed and agreed with the relevant stakeholders. They will be produced for the viewpoint locations being adopted to inform the landscape and visual assessment. If required, specific wireline views will be created where baseline panorama could not be captured such as from individual properties for the RVAA.

In accordance with NatureScot's recent guidance on the assessment of aviation lighting, two to three of the viewpoints will be represented with 'night-time' views. These viewpoints will be identified following confirmation of the lighting strategy to be adopted for the repower turbines and identification of key night-time receptors.

### 8.4.8. Aviation Lighting

The LVIA will include consideration of the potential effects on the landscape, and the views and visual amenity of people resulting from visible aviation warning lighting (if visible lighting is adopted). A Night-time Aviation Lighting Assessment (NALA) would be undertaken in accordance with NatureScot's recently published guidance (Guidance on Aviation Lighting Impact Assessment, November 2024) and form part of the landscape and visual impact assessment. The scope to the NALA (including viewpoints to be assessed) will be agreed through consultation with LPA and statutory consultees.

### 8.4.9. Effects Assessment

The methodology for the effects assessment will be based on the following current best practice guidance:

- Institute of Environmental Management and Assessment (IEMA) Guidance (IEMA, 2015 and 2017);
- Guidelines for Landscape and Visual Impact Assessment – Third Edition (GLVIA3); and
- NatureScot guidance on the Visual Representation of Wind Farms, Version 2.2 (2017).

The two components of the LVIA will be based on the following definitions:

- 'Assessment of landscape effects: assessing effects on the landscape as a resource in its own right' (Landscape Institute and IEMA, pp. 21, 2013); and
- 'Assessment of visual effects: assessing effects on specific views and on the general visual amenity experienced by people' (Landscape Institute and IEMA, pp. 21, 2013).

The Project may have a direct (physical) effect on the landscape in which it is located as well as an indirect or perceived effect from landscape character areas surrounding it. The potential landscape effects, occurring during the construction and operation of the proposed Development may therefore include, but are not restricted to, the following:

- Changes to landscape elements: the addition / revision of new elements and other characteristic elements of the landscape character type;
- Changes to landscape qualities: degradation, erosion, or reinforcement of landscape elements and patterns, and perceptual characteristics, particularly those that form key characteristic elements of landscape character types;
- Changes to landscape character: landscape character may be affected through the effect on characteristic elements (including perceptual characteristics), landscape patterns and attributes and the cumulative addition of new features, the magnitude and presence of which is sufficient to alter a notable part of the overall landscape character type of a particular area; and
- Cumulative landscape effects: where more than one project may lead to a potential landscape effect.

Visual effects are concerned wholly with the effect of proposed Development on visual receptors and general visual amenity. Visual effects are identified for different receptors (people) who would experience the view such as at their places of residence, during recreational activities, at work, or when travelling through the area. Visual effects may include the following:

- Visual effect: change in the appearance of the landscape as a result of the proposed Development. This may include changes to the quality of the view, ability of the visual receptor to appreciate the view, or changes to the characteristic elements within the view. These changes can be positive (i.e. beneficial or an improvement) or negative (i.e. adverse or a detraction); and
- Cumulative visual effects: the cumulative or incremental visibility of similar types of development may combine to have a cumulative visual effect.

Particular attention will be dedicated to the proposed Development's impact on local residents as they would experience the proposed Development from different locations, at different times of the day, usually for longer periods of time, and in different seasons.

### 8.4.10. Level of Effect Criteria

Essentially, the level of landscape and visual effect is determined through consideration of the 'sensitivity' of:

- The landscape element, assemblage of elements, key characteristics or character type or area under consideration bearing in mind quality and value; or
- The visual receptor; and
- The 'magnitude of change' posed by the proposed Development, in this case the decommissioning of the existing turbines and the repowering construction phase of the windfarm and associated infrastructure, the operational life of the windfarm and it's associated infrastructure, and subsequent decommissioning phase.

The process involves design and re-assessment of any remaining, residual significant adverse effects that could not otherwise be mitigated or 'designed out'. Landscape or visual sensitivity is ranked from high, medium, low to negligible and the magnitude of change is similarly ranked from large, medium, small to negligible as indicated in **Table 8.3**.

The type of effect is also considered and may be direct or indirect, temporary or permanent, cumulative, and positive, neutral or negative. The landscape and visual assessment involve a combination of both quantitative and subjective assessment and wherever possible will seek to gain a consensus of professional opinion through consultation, peer review and the adoption of a systematic, impartial, and professional approach.

In accordance with EIA Regulations, it is essential to determine whether the predicted effects are likely to be 'significant'. Significant landscape and visual effects, in the assessor's opinion, resulting from the proposed Development would be all those effects that normally result in a 'major', a 'moderate to major', or 'moderate' effect with any exceptions being clearly explained (refer to **Table 3.2**).

Effects predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA Regulations and are shaded in light green in **Table 3.2**.

#### 8.4.10.1. Cumulative Assessment

In accordance with the EIA Regulations, the LVIA will consider 'cumulative effects'. An assessment of the cumulative effects of existing or 'reasonably foreseeable' renewable energy developments together with the proposed Development will be undertaken in line with NatureScot guidance and GLVIA3, and according to the following definitions:

- Cumulative effects are defined as the additional changes caused by the proposed Development in conjunction with other similar developments or as the combined effect of a set of developments, taken together;
- Cumulative landscape effects are defined as effects that 'can impact on either the physical fabric or character of the landscape or any special values attached to it'; and
- Cumulative visual effects are defined as effects that can be caused by combined visibility, which 'occurs where the observer is able to see two or more developments from one viewpoint' and/or sequential effects which 'occur when the observer has to move to another

viewpoint to see different developments' (Assessing the Cumulative Landscape and Visual Impact of Onshore Wind Energy Developments, NatureScot, 2021).

## 8.5. Summary

A summary of the scoping assessment findings is provided in **Table 8.3**.

***Table 8.3– Landscape and Visual Amenity Scoping Assessment Summary***

| Potential Effect | Proposed Development Phase | Rationale | Further Assessment |
|---|---|---|---|
| **Scoped In** | | | |
| Landscape character & Landscape Designations within 30 km radius | Decommissioning of existing turbines, Construction, and Operation of proposed new turbines | There is a potential for significant effects on the landscape character and landscape designations. A preliminary assessment will accompany the LVIA to ascertain which landscape character receptors will be assessed in detail to prepare a proportional landscape assessment. | A desktop review of landscape character assessment and landscape designation descriptions to identify potential receptors and inform appropriate mitigation measures. Augment and verify the published descriptions of landscape character with fieldwork observations. Undertake an assessment of the quality or condition of baseline landscape and visual resources in the field. |
| Visual effects on representative viewpoints selected to illustrate the view from recreational routes, recreational locations, the road network and settlements | Decommissioning of existing turbines, Construction, and Operation of proposed new turbines | Visual effects on the views of the windfarm within the landscape. This includes visual effects on representative viewpoints selected to illustrate the view from recreational routes / locations and the road network, to prepare a proportional visual assessment. | A desktop review of the ZTV and aerial mapping to determine the proposed viewpoints to confirm they are representative of all potential visual receptors. These are then verified in the field. |
| Visual effects on Residential receptors within 2 km of the proposed Development | Decommissioning of existing turbines, Construction, and Operation of proposed new turbines | A RVAA will address the potential for significant visual effects on the views from residential properties, and the visual amenity of those living in close proximity to the proposed Development | A desktop review of the ZTV and aerial mapping to determine the locations of the nearest residential properties. The site assessment will ground truth the location, orientation, garden, driveway and primary elevations of the properties and views from the properties |
| Static, and sequential, cumulative visual effects on views from the local & main road network | Decommissioning of existing turbines, Construction, and Operation of proposed new turbines | Visual effects on the views of the windfarm within the landscape will be assessed and presented in the LVIA. This includes sequential visual effects on views from the local & main road network, to prepare a proportionate cumulative visual assessment. | A desk top review of the cumulative ZTVs, which is then verified in the field by site assessment using wireline visualisation to illustrate potential sequential cumulative visual effects on roads within the local landscape from the road network. |

| Scoped Out | | | |
|---|---|---|---|
| Landscape character & Landscape / heritage designations outwith the 30 km Wider Study Area | Decommissioning of existing turbines, Construction, and Operation of proposed new turbines | Those LCTs and designated landscapes, or heritage locations, outwith the study area where the distance from the proposed Development which would result in non-significant indirect landscape effects on the landscape character and the designated landscapes. | N/A |
| Those LCTs outwith the ZTV and within 30 km of the proposed Development | Decommissioning of existing turbines, Construction, and Operation of proposed new turbines | Those landscape designations which have limited / fragmented visibility of the proposed Development, which would result in non-significant indirect landscape effects on the landscape character. | N/A |
| Those landscape designations which have no visibility of the proposed Development | Decommissioning of existing turbines, Construction, and Operation of proposed new turbines | Those landscape designations which have limited / fragmented visibility of the proposed Development, which would result in non-significant indirect landscape effects on the designated landscape. | N/A |
| Visual receptors outwith the ZTV and within 30km of the proposed Development | Decommissioning of existing turbines, Construction, and Operation of proposed new turbines | Effects on visual receptors with limited or no visibility of the Development. A preliminary assessment will accompany the LVIA to ascertain which visual receptors are assessed in detail. | N/A |

## 8.6. Questions for Consultees

- Do you have any comments on the proposed LVIA methodology?
- Are you aware of any relevant policies or guidance documents not specifically mentioned in this section of the Scoping Report?
- Are you in agreement with the proposed Wider and Cumulative LVIA Study Area within a 30 km radius, a Detailed Study Area of 10 – 15 km radius and a 2 km radius Study Area for the assessment of predicted views from residential properties?
- Are you in agreement with the proposed Viewpoint Locations shown in **Table 8.2** and illustrated on **Figure 8.1**? Are there any additional viewpoints we could consider?
- Do you have any comment on the proposed baseline of existing operational wind farm, landscape character, landscape designations and proposed visual receptors, and the proposed data sources, are there any information or receptor gaps?
- Do you have any comments or suggestions on the approach to cumulative landscape and visual assessment?

# 9. Archaeology and Cultural Heritage

## 9.1. Introduction

This chapter outlines the potential effects of the proposed Development on archaeology and cultural heritage visual receptors and sets out the methodology to be undertaken to further assess the likely significant effects during the EIA.

The scoping assessment considers the potential effects of the proposed Development during the following phases:

- Decommissioning of the existing Elliots Hill Windfarm and Wolf Bog Windfarm;
- Construction of the proposed Development;
- Operation of the proposed Development; and
- Future decommissioning of the proposed Development.

## 9.2. Baseline and Key Sensitivities

### 9.2.1. Site Setting

The Site is located on the western side of Big Collin hill within the Tildarg townland. Elliots Hill Windfarm can be accessed from the Tildarg Road while Wolf Bog Windfarm can be accessed from the B94, Collin Road. The Site represents an area of upland grazing which is surrounded by agricultural land most of which is under pasture. A small area of forestry is located adjacent to the northwestern boundary of the Site.

### 9.2.2. Cultural Heritage Assets within the Site

A desktop survey of the publicly available material within the Department for the Communities Northern Ireland Sites and Monuments Record (NISMR) datasets (Department for Communities. Northern Ireland Sites and Monuments Record Online Interactive Database) including: Scheduled Historic Monument Areas, Areas of Special Archaeological Interest, Defence Heritage, Historic Parks and Gardens, Industrial Heritage Record, Listed Buildings, Northern Ireland Sites and Monuments Records, and Areas of Archaeological Potential, has identified no recorded cultural heritage assets within the area of the Site (**Figure 9.1**). An inspection of the 1st and 2nd edition Ordnance Survey maps shows no evidence of any historical features within the Site (**Figure 9.2** and **Figure 9.3**).

### 9.2.3. Cultural Heritage Assets beyond the Site

For the purposes of this assessment, the desktop survey was extended out to a 5 km search radius from the red line boundary for the Site. The desk top survey identified the cultural heritage assets summarised in **Table 9.1** and illustrated on **Figures 9.4** to **9.7**.

***Table 9.1 - Cultural Heritage Assets Within 5 km***

| Data Source | Identified assets within 5 km search radius |
|---|---|
| Northern Ireland Sites and monuments Records (NISMR) | 135 |

| | |
|---|---|
| Scheduled monuments | 18 |
| State care monuments | No |
| Area of Archaeological Potential (AAP) | No |
| Area of significant archaeological interest (ASAI) | No |
| Industrial Heritage Records (IHR) | 110 |
| Historic Buildings Records (HBR) | 12 |
| Historic Gardens Register | 1 |
| Defence Heritage Register | 44 |
| Battle sites | 1 |
| Excavations database | 5 |

### 9.2.4. Key Sensitivities

The initial desk-based assessments indicate that there are no designated heritage assets within the area of the Site. Looking beyond the Site, there are 18 Scheduled Monuments, 12 Listed Buildings and 1 Historic Garden within a 5km search radius. These are detailed in **Tables 9.2** to **9.4**. Due to their proximity to the proposed Development, these assets have the potential to be subject to an effect on their setting. This impact will be based on the nature and scale of the of the intervisibility between the assets and the proposed Development. Of particular note is asset ANT 45:01, a prehistoric cairn located on the summit of Big Collin and immediately adjacent to the Site. The scheduled monuments, listed buildings and historic garden will be subject to further assessment through the EIA process.

***Table 9.2 - Scheduled Monuments within the 5 km Study Area***

| Scheduled Monument Number | Name and Description |
|---|---|
| ANT 39:01 | Counterscarp Rath |
| ANT 39:10 | Round Cairn |
| ANT 39:12 | Raised Rath |
| ANT 39:18 | Mound |
| ANT 39:20 | Ecclesiastical Enclosure with Souterrains |
| ANT 39:23 | Court Tomb |
| ANT 44:13 | Standing Stone |
| ANT 44:19 | Barrow |
| ANT 44:21 | Rectangular Earthwork |
| ANT 44:22 | Standing Stone |
| ANT 44:35 | Court Tomb |
| ANT 44:37 | Court Tomb |
| ANT 45:01 | Round Cairn |
| ANT 45:02 | Counterscarp Rath |
| ANT 45:03 | Rectangular Enclosure |
| ANT 45:07 | Motte |
| ANT 45:11 | Enclosure and field system- possible Moated Site |
| ANT 45:36 | Barrow |

*Table 9.3 - Listed Buildings within the 5 km Study Area*

| Historic Building | Address | Use | Grade |
|---|---|---|---|
| 06/07/014 | Killylane Bridge Larne Road Kilwaughter Larne | Bridge | Record Only |
| 07/11/008 | Moorfields Bridge, Speerstown Road, Ballymena | Bridge | B2 |
| 07/11/009 | Battery Bridge, Collin Road, Ballymena | Bridge | B1 |
| 20/05/004 | Tardree Cottage, Tardree Road, Kells | Office | Record Only |
| 20/06/012 | Drumadarragh House, 2 Drumadarragh Rd, Doagh | House | B1 |
| 20/06/013 | 96 Ballybracken Road Doagh | House | Record Only |
| 20/06/023 | Brookfield Cottage 12 Burnside Road Doagh | House | Record Only |
| 21/02/006 | Stephenson Mausoleum, Kilbride Cemetery, Moyra Road, Doagh | Mausoleum | B+ |
| 21/04/008 | Orpin's Mill Orpinsmill Road, Doagh | Mill | B2 |
| 21/04/011 | Mosestown Carnlea Road, Ballyclare | House | B2 |
| 21/04/012 | Collin Road, Ballyclare | House | Record Only |
| 21/04/015 | Breckenhill 45 Breckenhill Road Doagh | House | B2 |

*Table 9.4 - Historic Gardens within the 5 km Study Area*

| Park and Garden Reference | Proposed Development Phase |
|---|---|
| AN-151 | Drumadarragh House |

## 9.3. Potential Effects Assessment

### 9.3.1. Scoped In Effects

The scoped in effects for the proposed Development relate to the construction and operational phases of the project. The construction stage effects will be those direct physical impacts upon previously unknown, sub-surface archaeological deposits within the Site. The operational stage effects will be those that have direct impact upon the setting of regionally important monuments, historic gardens and listed buildings identified within the wider search radius.

### 9.3.2. Scoped Out Effects

Due to the temporary nature of the construction phase, the potential for impacts on the setting of identified cultural heritage assets has been scoped out of further assessment.

The decommissioning stage of the existing Elliots Hill Windfarm and Wolf Bog Windfarm and future repower windfarm has been scoped out of further assessment. The decommissioning of the existing infrastructure will have no impact upon cultural heritage assets within the Site boundary.

## 9.4. Proposed Methodology for Further Assessment

Further assessment of likely significant effects during the EIA will involve a basic four step approach:

- Consultation with M&EABC and the Historic Environment Division;
- Detailed desktop study;
- Field survey; and
- Assessment of the likely significant effects for both construction and operational phases of the proposed Development.

### 9.4.1. Desktop Study

A detailed desktop study will be undertaken of the Site and an area extending out to a 5 km search radius from the Site boundary. This will be achieved using published data available online from the Department for Communities: Historic Environment Division Sites and Monuments Record (DfC:HED NISMR) as well as cartographic material available from the Public Records Office Northern Ireland (PRONI). The desktop study will identify the various types and details of the cultural heritage assets within the study area.

### 9.4.2. Field Surveys

A detailed walkover survey of the Site will be undertaken. The purpose of the walkover survey will be to identify potential archaeological features within the Site which are not recorded within any of the available databases and existing baseline information utilised to form the desktop study. Particular attention will be paid to those areas of the Site where new development may occur.

### 9.4.3. Effects Assessment

The impact assessment will look at the potential construction effects on the previously unknown, sub-surface archaeological deposits identified within the Site and the operational (including cumulative) effects on the setting of the regionally important monuments, historic gardens and listed buildings identified within the wider search radius. Of particular relevance here will be the impact on the setting of the scheduled monument ANT 45:01, located on the summit of Big Collin.

For the purposes of the assessment of cumulative effects, only windfarm developments (operational, under construction, consented or application stage windfarms) within c.10 km of the Site will be considered.

The impact on assets identified within the M&EABC area will be assessed using the planning guidelines as set out in the M&EABC LDP 2030.

The impact on assets identified within the Antrim and Newtownabbey Borough Council area will be assessed using the planning guidelines as set out in the SPPS. It should be noted that the Local Development Plan for Antrim and Newtownabbey Borough Council is currently at draft stage and may be fully adopted during the assessment period.

The operational effects will be assessed utilising the guidance set out in the Department for Communities: Historic Environment Division publication: ‘Guidance on Setting and the Historic Environment’. This document includes a definition of setting, identifies those key aspects of setting which can contribute to the significance of a heritage asset, and outlines a three-stage process for assessing the impacts of change upon setting. This assessment will entail input

from ZTV analysis with those assets of regional importance (Scheduled Monuments, Listed Buildings and Historic Gardens) which are intervisible with the proposed Development requiring further assessment at EIA stage. This will include field inspection of the monuments and the generation of wireframes and/or photomontages where appropriate.

## 9.5. Summary

A summary of the scoping assessment findings is provided in **Table 9.5**.

***Table 9.5– Archaeology and Cultural Heritage Scoping Assessment Summary***

| Potential Effect | Proposed Development Phase | Rationale | Further Assessment |
|---|---|---|---|
| **Scoped In** | | | |
| Impact upon previously unknown, sub-surface archaeological deposits within the Site | Construction stage | Potential for new construction works to identify sub-surface archaeological deposits within the Site, outside of the existing footprint | Desktop survey and site inspection to establish the baseline potential for archaeological discoveries within the Site. |
| Impact upon the setting of regionally important monuments, historic gardens and listed buildings identified within 5 km of the Site | Operational stage | Potential for the operational phase to impact on the setting of the identified cultural heritage assets | Desktop survey to identify relevant cultural heritage assets for potential assessment.<br><br>ZTV analysis and field inspection of monuments to establish potential for impact on setting.<br><br>Assessment on impact on setting using photomontages where applicable. |
| **Scoped Out** | | | |
| Impact upon previously unknown, sub-surface archaeological deposits within the Site | Decommissioning Stage of the existing wind farm | The decommissioning works will have no impact on archaeological deposits within the Site. | N/A |

## 9.6. Questions for Consultees

Key questions for the Council and Consultees are:

- Do the Consultees agree with the proposed methodology and scope of assessment?
- Do the Consultees have any information regarding current or recent archaeological work or projects being undertaken within the 5 km Study Area, particularly those whose results may not yet be recorded in the Northern Ireland Sites and Monuments Records?
- Are the Consultees aware of any further sites with statutory protection within the wider landscape whose settings may be affected by the Development?

Do the Consultees have details of any cultural heritage sites in the vicinity of the proposed Development which it considers may require further consideration within the EIA process?

# 10. Noise

## 10.1. Introduction

This chapter outlines the approach to assessing potential effects of noise and vibration from the proposed Development on nearby noise-sensitive receptors (NSRs).

The scoping assessment considers the potential effects of the proposed Development during the following phases:

- Decommissioning of the existing Elliots Hill Windfarm and Wolf Bog Windfarm;
- Construction of the proposed Development;
- Operation of the proposed Development; and
- Future decommissioning of the proposed Development.

During their operation, windfarms have the potential to create noise effects through both aerodynamic noise and mechanical noise. Aerodynamic noise would be caused by the interaction of the turbine blades with the air. Mechanically generated noise would be caused by the operation of internal components, such as the gearbox and generator which are housed within the nacelle of the turbine. However, the level of mechanical noise radiated from current technology wind turbines is generally engineered to a low level.

During construction and decommissioning, noise and vibration could arise from both onsite activities, such as the construction or upgrade works of onsite access tracks, turbine foundations, and from the movement of decommissioning and construction related traffic both on the Site and travelling on public roads to and from the Site.

## 10.2. Baseline and Key Sensitivities

### 10.2.1. Site Setting

The Site is located in an area of low population density, with scattered residential & agriculture properties surrounding the Site. The noise environment in the surrounding area is expected to be characterised in many cases by ‘natural’ sources, such as wind disturbed vegetation, birds and farm animals. Some anthropological sources are expected from agriculture activities and road traffic noise, which will have influence in areas, in particular, at residents located along the B94 road, and to a lesser extent other local roads such as the Tildarg Road and Whappstown Road, although this will tend to reduce at night. Noise from the existing Elliots Hill and Wolf Bog Windfarms will also be audible at some of the properties in some conditions.

### 10.2.2. Baseline

Baseline noise measurements have been previously undertaken as part of the original application for Elliots Hill Windfarm and Wolf Bog Windfarm. However, the baseline data used in the 2004 Wolf Bog Environmental Statement (Renewable Energy Systems Ltd, 2004) were derived from survey data undertaken before the construction of Elliots Hill Windfarm wind turbines, pre-dating the ETSU-R-97 guidance. Given the lengthy time since the past surveys and that the surveys were undertaken pre-ETSU-R-97 guidance, this baseline data cannot be used for the purpose of further assessment of the proposed Development.

An application was consented in 2018 for the Castlegore & Whappstown windfarm (Ref: LA02/2018/0897/F) located directly adjacent (north west) to the proposed Development. This

application included a noise assessment based on a survey undertaken in October 2014 at four monitoring locations around the Site area. An initial review of historical satellite imagery and planning history show no substantial change in developments or infrastructure in the area that will change the background noise characteristics since the time of the survey. The survey locations and measured data was originally acquired in agreement with the local authority and was used in the consented windfarm assessment, therefore, the data is considered likely to still be representative of the properties surveyed.

The historical survey data referenced wind speeds measured relative to hub heights of the Castlegore & Whappstown wind turbines and standardised in line with current good practice. It is therefore proposed to reference these previous measurements as part of the assessment of the proposed Development with some corrections for wind shear effects to account for the difference in hub heights of the Proposed Development, in line with current good practice.

Influence from the operational wind turbines was also minimised at these previous measurement locations by monitoring at further away properties and using directional filtering to exclude noise measurements downwind from the existing Elliots Hill and Wolf Bog Windfarms, this approach was agreed with the LPA at the time of the assessment. The robustness of the data will be reviewed in further detail and its use will be agreed in consultation with the M&EABC.

This existing baseline data represents most of the properties in the area surrounding the Site, however, some properties to the east are not represented by this historical baseline data. It is anticipated that a supplementary baseline survey may therefore be required at potentially two locations to supplement the historical data and establish the background environment at the nearest NSRs to the east.

The use of historical data, exact measurement locations, and survey methodology will be discussed and agreed in consultation with the M&EABC.

Given the rural nature of the Site, it is anticipated that the acoustic environment will be quiet, and therefore, the lowest category criterion in BS 5228-1:2009+A:2014 '*Code of practice for noise and vibration control on construction and open sites – Part 1: Noise'*, based on absolute levels can be used for the construction (and decommissioning phases) noise assessment. Baseline measurements will therefore not be required for the construction (and decommissioning phases) assessment which can be assessed as a desktop study with conservative assumptions for the criteria.

### 10.2.3. Key Sensitivities

Key sensitivities in terms of noise are the highly sensitive residential receptors in proximity to the proposed Development. There are several properties surrounding the Site, which will require careful consideration and assessment in terms of operational noise from the repowering turbines.

Some of these noise-sensitive residential locations will also be potentially affected by noise or vibration effects from the decommissioning of the existing Windfarms, and construction and decommissioning activities of the proposed Development. In addition, dwellings located along site access tracks or transport routes will also be considered in relation to existing windfarm decommissioning and construction traffic.

## 10.3. Potential Effects Assessment

### 10.3.1. Scoped In Effects

The following effects will be included within the scope of the assessment:

- Decommissioning noise & vibration of existing Elliots Hill Windfarm and Wolf Bog Windfarm;
- Construction noise & vibration of proposed Development and associated infrastructure;
- Construction traffic noise; and
- Operational noise from wind turbines.

Initial decommissioning activities of the existing wind turbines and infrastructure will be included as part of the construction phase of the proposed Development and will be assessed. Other effects such as noise and vibration from blasting at borrow pits will be considered in the assessment if applicable.

### 10.3.2. Scoped Out Effects

It is recognised that vibration resulting from the operation of wind farms is imperceptible even at short distances of 25 metres or more from a turbine, and separation distances from all receptors to the proposed turbines are well in excess of this. It is therefore proposed to scope out the assessment of vibration produced during the operation of the proposed Development.

The Design Manual for Roads and Bridges (DMRB) (The Highways Agency, Transport Scotland, Transport Wales and The Department for Regional Development (Northern Ireland), 2020) advises that significant vibration impacts from traffic using the road network is unlikely and references BS 5228-2 (British Standards Institute, 2014) which does not consider vibration from vehicle movements as a notable source. Whilst occasional momentary vibration can arise when heavy vehicles pass dwellings at very short separation distances (i.e. 10 m or less), this is not sufficient to constitute a risk of significant effects and therefore vibration impacts associated with road traffic during all phases of the proposed Development are proposed to be scoped out.

With regards to infrasound and low frequency noise, the PPS18 (2009) refers to a study by Department of Environment, Food & Rural Affairs (DEFRA, 2003) entitled '*The measurement of low frequency noise at three UK Wind Farms, W/45/00656/00/00', which states "… the principal finding were that infrasound associated with modern wind turbines is not a source which will result in noise levels which may be injurious to the health of a wind farm neighbour*". The current recommendation is that ETSU-R-97 (Department of Trade & Industry, 1996) should continue to be used for the assessment and rating of operational noise from windfarms. It is therefore not proposed to undertake specific assessments of infrasound and low frequency noise. The noise assessment will, however, consider the latest supporting information on these subjects and the topic of wind turbine blade swish or Amplitude Modulation (AM).

Traffic during the operational phase of the proposed Development is likely to be very low and is considered unlikely to have any noise effects and is also proposed to be scoped out.

The life expectancy of the repowered windfarm would be 40 years. Future decommissioning would therefore be undertaken and would be broadly similar to that outlined in **Section 2.3.1** and noise and vibration effects similar to those detailed in **Section 10.3.1**. Furthermore, due to the reduced number of repower turbines (five) that would require future decommissioning, the potential noise and vibration effects associated with such decommissioning are expected to be less significant than those resulting from the combined decommissioning of the 15 existing turbines and construction of the proposed Development. As such, the combined works are considered to represent the worst-case scenario for the purposes of the EIA and future decommissioning of the repowered windfarm scoped out of the EIA.

## 10.4. Proposed Methodology for Further Assessment

Further assessment of likely significant effects during the EIA will involve detailed assessment based on desktop study of decommissioning and construction phases, including traffic noise effects, collection of data from field baseline surveys and historical data will be used to inform the assessment of operational noise from wind turbines.

### 10.4.1. Legislation and Guidance

The noise assessment will be undertaken with reference to the following documents:

- Planning Policy Statement 18: Renewable Energy, and associated Best Practice Guide (PPS18), Department of the Environment, August 2009;
- The Control of Noise (Codes of Practice for Construction and open Sites) Order (Northern Ireland) (CNO), The Department of Environment, November 2002;
- The Working Group on Noise from Wind Turbines (1996) ETSU-R-97, the Assessment and Rating of Noise from Windfarms, Final Report for the Department of Trade & Industry;
- M. Cand, R. Davis, C. Jordan, M. Hayes, R. Perkins (2013). A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, Institute of Acoustics;
- Bowdler et al (2016) Wind farms cumulative impact assessment, Institute of Acoustics Noise Bulletin Vol. 41 No. 1, Jan/Feb 2016;
- British Standards Institute (2019) BS 4142:2014+A:2019 'Method for rating and assessing industrial and commercial sound.';
- British Standards institute (2014) BS 5228-1:2009+A:2014 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.';
- British Standards institute (2014) BS 5228-2:2009+A:2014 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.';
- Mid and East Antrim Borough Council Local Development Plan (LDP) 2030, October 2023;
- British Standards institute (2008) BS 6472 2:2008: 'Guide to evaluation of human exposure to vibration in buildings - Part 2: Blast-induced vibration.';
- Her Majesty's Stationery Office (HMSO) Department of Transport (1988) 'Calculation of Road Traffic Noise' (CRTN); and
- The Highways Agency, Transport Scotland, Transport Wales and The Department for Regional Development (Northern Ireland) (2020) Design Manual for Roads and Bridges, LA 111 Noise and vibration, revision 2 (DMRB).

PPS18 (2009) and associated Best Practice Guide refers to ETSU-R-97 for the assessment of noise from windfarms, the PPS18 states: "*The report, 'The assessment and Rating of Noise from Wind Farms (ETSU-R-97), describes a framework for the measurement of wind farm noise and gives indicative noise levels calculated to offer a reasonable degree of protection to wind farm neighbours, without placing unreasonable restrictions on wind farm development*." The use of ETSU-R-97 as assessment criterion is therefore considered to be in line with the PPS18.

Good practice in the application of the ETSU-R-97 methodology will be referenced, as set out in Institute of Acoustics Good Practice Guide (M. Cand, R. Davis, C. Jordan, M. Hayes, R. Perkins, 2013) to the Application of ETSU-R-97 (IOA GPG). This includes guidance on the

assessment of cumulative operational noise impacts from windfarms, and on this point, further guidance set out in a 2016 article in the Institute of Acoustics Noise Bulletin will also be considered.

Construction noise assessment is referred to in the CNO (Department of Environment, November 2002) which advice the use of BS 5228-1 & 2 as being suitable guidance on appropriate methods for controlling noise & vibration from construction and open sites in Northern Ireland.

M&EABC LDP 2030 outlines the strategic approach for renewable energy developments including windfarms, in the borough, it states that renewable energy developments with any associated buildings and infrastructure will be permitted where it meets the general policy and criteria, which in terms of noise include: "*b) it will not cause significant harm to the safety and amenity of any sensitive receptors (including future occupants of committed developments) arising from noise; shadow flicker; ice throw; and reflected light;".* It also states that wind development must take into account cumulative impacts from existing wind turbines, including extant permissions and undetermined applications.

### 10.4.2. Study Area

The assessment will consider noise sensitive residential locations in the vicinity of the proposed Development. Specifically, ETSU-R-97 states that noise levels will be considered acceptable, even in the absence of measured baseline data, if predicted noise levels (including cumulative contributions from all windfarms) do not exceed 35 dB LA90. This is often referred to as the simplified ETSU-R-97 noise assessment methodology.

There are two consented windfarms and one operational windfarm near the proposed Development, including: Castlegore & Whappstown Windfarms (consented) and Corby Knowe Windfarm (operational). The Study Area will encompass dwellings where cumulative predicted levels exceed, approach or are likely to approach this 35 dB LA90 threshold. Provided that specific contribution of the proposed Development is not acoustically negligible relative to that of the other wind developments, including those wind turbines built and operating and those which are proposed within the planning system as above.

### 10.4.3. Desktop Studies

#### 10.4.3.1. Operation

The methodology for the assessment of operational noise from windfarms is documented in ETSU-R-97. In summary, the assessment shall:

- Identify the nearest NSRs;
- Determine the quiet daytime and night-time noise limits from the background noise levels at the nearest neighbours;
- Specify the type and noise emission characteristics of the wind turbines for the proposed Development;
- Calculate noise emission levels which would be due to the operation of the wind turbines as a function of site wind speed at the nearest neighbours, including the cumulative effect of all turbines from other windfarms where relevant;
- Compare the calculated windfarm noise emission levels with the derived noise limits; and

The good practice guidance referenced above (IOA GPG) will be taken into account, including advice on baseline survey, wind shear calculations, and noise prediction methodology.

The calculated windfarm noise emission levels will be compared with the noise limits derived in accordance with ETSU-R-97. The noise limits derived according to the ETSU-R-97 guidance, for each NSR, apply to the total noise produced by all windfarms. Therefore, potential cumulative operational noise levels, including existing, consented and proposed wind turbines in the area, must be assessed relative to these limits.

When considering neighbouring cumulative windfarm noise, the potential noise emissions from the adjacent windfarm sites will be considered by examining the potential level of noise emission allowed under the respective consent for each of the sites, in line with the IOA GPG current best practice. The assessment methodology, in particular with regards to cumulative impacts, will also be discussed with the LPA.

#### 10.4.3.2. Construction (& Decommissioning)

In assessing the impact of noise and vibration from the initial decommissioning of existing infrastructure and subsequent construction activities, it is usual to accept that the associated works are of a temporary nature. The assessment of potential impacts due to noise emissions during construction will be undertaken in accordance with the BS 5228 British Standard guidance 'Code of practice for noise and vibration control on construction and open sites.' Predictions of construction noise will be made referencing typical activity emission levels and likely variations in noise levels at surrounding receiver locations, using the methodology set out in BS 5228 Part-1. Part 2 of the BS 5228 standard considers construction vibration, and this will also be referenced.

Any blasting, if used for rock extraction at borrow pits, may also create vibration and air overpressure which will be considered in the assessment if applicable.

Consideration will also be given to the potential impact of construction traffic noise on sensitive receptors in the area. The impact of traffic noise along the Site access routes will be assessed on the basis of the methodology within BS 5228-1, and the CRTN publication, where appropriate.

### 10.4.4. Field Surveys

The baseline environment will be assessed by measuring background noise levels as a function of wind speed at the nearest neighbours (or at a representative sample of the nearest neighbours), as required under ETSU-R-97 '*The Assessment and Rating of Noise from Wind Farms'*. ETSU-R-97 also requires that any such measurements are not significantly influenced by existing operational turbines, to prevent unreasonable cumulative increases.

It is anticipated that a baseline survey will be required at potentially two locations representative of the residential receptor surrounding the Site. The baseline survey will consist of measuring background noise levels as a function of wind speed in accordance with the methodology outlined in ETSU-R-97 and the IOA GPG.

An initial site survey of the area is recommended to be undertaken to identify the surrounding residential properties and verify their up-to-date status i.e., occupied, in construction, unoccupied but habitable, consented in planning, derelict etc. to accurately inform the noise assessment.

### 10.4.5. Effects Assessment

#### 10.4.5.1. Sensitivity of Receptors

All residential properties will be considered to be of high sensitivity to noise. Other receptors such as commercial, industrial, or agriculture properties are of low sensitivity and will not have

significant effects even with high impact magnitude, as such these are not considered further in the assessment.

#### 10.4.5.2. Magnitude of Impact

The assessment of construction noise and vibration will identify if and when predicted noise levels may be above standard guideline limits, taking into account the rural character of the area. The assessment of the temporary effects of construction noise is primarily aimed at understanding the need for dedicated management measures and, if so, the types of measures that are required. In this respect, relevant working practices, traffic routes, and proposed working hours will be considered in the assessment. **Table 10.13** presents the criteria that will be used.

***Table 10.13 - Impact Criteria for Construction Noise***

| Impact Magnitude | Definition |
|---|---|
| **High** | Construction noise is generally greater than 75 dB $L_{Aeq,T}$ during the construction period, or with periods of more than 85 dB $L_{Aeq,T}$ lasting not more than 4 weeks in any 12-month period. |
| **Medium** | Construction noise is generally less than or equal to 75 dB $L_{Aeq,T}$ during the construction period, with periods of up to 85 dB $L_{Aeq,T}$ lasting not more than 4 weeks in any 12-month period. |
| **Low** | Construction noise is generally less than or equal to 65 dB $L_{Aeq,T}$ during the construction period, with periods of up to 75 dB $L_{Aeq,T}$ lasting not more than 4 weeks in any 12-month period. |
| **Negligible** | Construction noise is generally less than or equal to 55 dB $L_{Aeq,T}$, with periods of up to 65 dB $L_{Aeq,T}$ lasting not more than 4 weeks in any 12-month period. |

For construction traffic, the criteria set out in the DMRB are also likely to be referenced. Construction noise management procedures will also be determined.

For operational noise from the turbines, the calculated windfarm noise emission levels will be compared with the noise limits derived in accordance with ETSU-R-97 (as set out above), including consideration of cumulative noise levels.

#### 10.4.5.3. Significance of Effect

For construction noise and operational noise from the substation the magnitude of impacts translates directly to effect significance, given that all receptors would be of high sensitivity, with a scale of significance from negligible, through minor to moderate and major. Major or moderate construction impacts are considered ‘significant’ in the context of the EIA Regulations.

With regards to operational noise from wind turbines, if predicted (cumulative) noise levels from wind turbines are within the ETSU-R-97 derived noise limits, operational noise would be considered acceptable, and therefore not significant in EIA terms. If the predicted wind turbine noise levels are above the ETSU-R-97 noise limits, operational noise would be considered unacceptable and significant in EIA terms.

#### 10.4.5.4. Cumulative Impacts

Other planned and operational windfarms within 10 km of the proposed Development will be considered within the cumulative operational noise assessment (although it may be possible to scope out some developments within that area if predicted noise contributions at the nearest NSRs are negligible). Two windfarm developments are known to have been consented in proximity to the Site; Castlegore Windfarm and Whappstown Windfarm located to the north west

of the Site; these were later combined into one development application (Ref: LA02/2018/0897/F). An operational windfarm (comprising 3x turbines) named Corby Knowe Windfarm is located c.4.3 km to the south west of the Site, it is expected that noise from this development will have negligible cumulative contribution, however this will be reviewed during the initial assessment. There is also a consented 'Kells Solar Farm' development c.2.7 km to the west of Site however, cumulative effects at this distance from the operation or construction phases of the proposed Development and Kells Solar Farm are not expected and therefore proposed to be scoped out.

Based on robust assumptions, cumulative effects for construction and decommissioning, as well as traffic noise, for all developments in relevant proximity will be assessed in the EIA.

As the existing Elliots Hill Windfarm and Wolf Bog Windfarm would be decommissioned as part of the proposed Development they do not form part of the cumulative assessment.

## 10.5. Summary

A summary of the scoping assessment findings is provided in **Table 10.4**.

***Table 10.4 - Noise Scoping Assessment Summary***

| Potential Effect | Proposed Development Phase | Rationale | Further Assessment |
|---|---|---|---|
| **Scoped In** | | | |
| Noise & vibration, Traffic Noise | Decommissioning (existing infrastructure), Construction | Decommissioning noise may have some impact at nearby NSR and will be included with the assessment of the construction phase of the proposed Development. | Desktop assessment to BS 5228-1&2 for noise and vibration effects, and DMRB for traffic noise. |
| Noise | Operation | Wind Turbine noise will likely have some impact on surrounding NSRs and requires detailed assessment. | Field survey to inform ETSU-R-97 assessment of wind turbines. Review of historical baseline noise data. |
| Cumulative | Construction, Operation | Castlegore & Whappstown Windfarm, Corby Knowe Windfarm within 5 km to be included in cumulative assessments (including traffic noise). | Cumulative assessment against agreed cumulative operational noise limits and criteria. |
| **Scoped Out** | | | |
| Vibration | Operation | Vibration from wind turbine is imperceptible at typical NSR distances. | N/A |
| Traffic Noise | Operation | Traffic movement during the operation of the proposed Development will be low and does not require assessment. | N/A |
| Infrasound | Operation | Assessment of infrasound is not required. | N/A |
| Traffic Vibration | Construction, Operation, Decommissioning | DMRB states that vibration from traffic on main roads is negligible even at short distance | N/A |

| | | | |
|---|---|---|---|
| Cumulative | Construction, Operation, Decommissioning | Kells Solar Farm likely to have negligible cumulative effects for construction and operation | N/A |
| Noise & vibration effects | Future decommissioning of repowered windfarm in 40 years | Similar effects to decommissioning of existing Elliots Hill and Wolf Bog Windfarms anticipated; Future decommissioning would be of fewer turbines (five). Decommissioning and construction of proposed Development is a worse case scenario. | N/A |

## 10.6. Questions for Consultees

- Are the consultees happy with the suggested approach for the noise assessment, including elements scoped in and out?
- Do the consultees have any points to discuss with regards to the use of historical data and proposed background noise survey?

# 11. Material Assets

## 11.1. Introduction

This chapter outlines the proposed scope for assessing potential impacts on material assets as part of the EIA. Material assets in the vicinity of the Site included are transportation infrastructure (i.e. public roads including site access and traffic) and utilities (electricity and telecommunications).

## 11.2. Access, Traffic and Movement

Access, traffic and movement will be assessed to quantify the impact of the proposed Development on the public road network, and to assess the significance of any effects resulting from this. The assessment will consider the potential effects of the proposed Development from:

- decommissioning of the existing Elliots Hill and Wolf Bog Windfarms; and
- construction of the proposed Development.

The access, traffic and movement EIA (scoping and further assessment) is undertaken in accordance with Institute of Environmental Management and Assessment Guidelines, Environmental Assessment of Traffic and Movement (IEMA, July 2023), hereafter referred to as the 'IEMA Guidance'.

### 11.2.1. Baseline & Key Sensitivities

Sensitive receptors are defined as locations which are sensitive to changes in traffic conditions as a result of the proposed Development.

The area surrounding the proposed Development is predominantly rural, characterised by agricultural land and scattered settlements. The road network in the region comprises mainly narrow, single-carriageway rural roads, with some larger capacity roads which serve as primary routes providing regional connectivity, such as the A36 which links the smaller villages surrounding the site to Ballymena and beyond.

Any proposed haul roads in the area will consider the existing road infrastructure limitations, the potential impact on local traffic, and the sensitivity of the surrounding rural environment, particularly where these routes pass through settlements and close to residential properties.

Consideration will be given to affected parties or population groups such as non-motorised users, public right of way users and emergency services. Consideration is also given to special interests which includes locations with a concentration of vulnerable users such as hospitals and schools.

The sensitive receptors are assigned to the nearest link (being public roads within the vicinity of the Site which connect two defined points) and the relationship with the highway environmentally assessed, to understand sensitivity of those receptors to change.

### 11.2.2. Potential Effects Assessment

#### 11.2.2.1. Scoped In

The following potential effects will be considered further during the EIA:

- Severance of communities;
- Road vehicle driver and passenger delays;
- Non-motorised user delay;
- Non-motorised amenity;
- Fear and intimidation on and by road users;
- Road user and pedestrian safety; and
- Hazardous/large loads.

Effects of noise associated with increased traffic for the proposed Development will also be considered within the EIA. Further discussion on potential noise effects and their assessment is included in **Chapter 10**.

#### 11.2.2.2. Scoped Out

*Operational Phase Traffic*

The vehicles servicing the operational Elliots Hill and Wolf Bog Windfarms have been doing so since operations commenced in 1995 (Elliots Hill) and 2008 (Wolf Bog), as such, they form part of the existing baseline. Following construction of the proposed Development, it is not anticipated that vehicle volume to the Site would significantly change. It is therefore proposed to scope out potential traffic effects during operations.

*Future Decommissioning*

Future decommissioning of the repowered windfarm (in c.40 years time) could give rise to potential impacts on material assets similar to those identified herein for the decommissioning of the existing Elliots Hill and Wolf Bog Windfarms, for example, through increased traffic volumes and use of the local road network. However, it is proposed that future decommissioning impacts are scoped out of detailed assessment in the EIA. This approach is based on the assumption that the decommissioning of the existing operational Eliots Hill and Wolf Bog Windfarms will overlap, at least in part, with the construction of the proposed Development. Such an overlap is considered to represent a reasonable worst-case scenario in terms of potential impact on

material assets and therefore provides a more conservative basis for assessment than evaluating the decommissioning of the proposed Development in isolation.

*Hazardous Loads – Catastrophe Analysis*

Section 3 of the IEMA Guidance incudes assessment of hazardous loads / large loads. In the context of the proposed Development this would refer to turbine components and transformers, the movement of which would be subject to agreement with the relevant highway authorities and police through relevant permits applications.

Turbine components and transformers are transported under controlled conditions such as police escort, permit systems and timed deliveries, following significant planning. Due to the control measures in place and the nature of the material being transported, it is considered to not be hazardous and a 'catastrophe analysis' (IEMA Guidance) is scoped out of the EIA.

*Road User and Pedestrian Safety – Safe System Approach*

For road safety, the IEMA Guidance calls for use of a 'safe system' approach. Due to the temporary increase in traffic, which will result from the proposed Development over a short duration, it is considered disproportionate to undertake safety modelling of historical established links for such a temporary traffic increase. A 'collision cluster' approach is considered more appropriate in these circumstances and will therefore be used as the road traffic collision (RTC) assessment methodology.

The 'collision cluster' approach will identify any trends or 'clusters' in RTC data on the links in the Study Area and will consider the potential for adverse effects on safety as a result of the proposed Development. Additionally, engineering judgement will be used to assess the suitability of existing road geometry for HGVs and abnormal indivisible loads (AILs) and this will inform the assessment in relation to safety. RTC data will be acquired through consultation with DfI Roads and/or Police Service of Northern Ireland (PSNI).

*Road Vehicle Driver and Passenger Delays – Quantitative Assessment*

Driver delay on rural roads will primarily be affected by AILs. A review of the likely delay to drivers will be presented, however, due to the temporary duration of any delay no traffic modelling or simulation is proposed to be undertaken, and it is proposed that the assessment undertaken during the EIA will not quantify junction delays.

*Air Quality*

Given the nature and scale of the decommissioning/construction and operational phases, it is not anticipated that there would be significant levels of vehicular traffic. As such, potential impacts on local air quality are expected to be minimal. No major sources of air pollution are associated with the proposed Development, and background air quality in the area is considered to be within acceptable limits. It is therefore proposed to scope out a detailed air quality assessment from the EIA.

### 11.2.3. Proposed Methodology for Further Assessment

#### 11.2.3.1. Study Area

The origin of each type of construction material is unlikely to be known at the time of undertaking the assessment, therefore it is reasonable to limit the extent of the assessment to the nearest major roads, which is most likely to be the M2 and A8, north west and south east of the proposed Development, respectively. The entrance to the Site would be from either the B94 (Collin Road) or Tildarg Road and will be confirmed through ongoing design, consultation and the EIA. From review of available information, including recent access feasibility reports

(Envams, 2023 and Pell Frischmann, 2023), it is proposed that the Study Area will consider the following links (being public roads within the vicinity of the Site which connect two defined points):

- The A36 from the roundabout with the M2 (south-east of Ballymena) continuing until the roundabout with the A8 (south west of Milbrook);
- The B94 (Collin Road) from the A36 (Moorfields Road) to the existing Wolf Bog Windfarm entrance off Collin Road;
- Tully Road and Doagh Road from the A36/Tully Road junction, north of Dunnyvadden, to the junction with Tildarg Road; and
- Tildarg Road from the junction with Doagh Road to the existing Elliots Hill Windfarm site entrances off Tildarg Road.

#### 11.2.3.2. Baseline Traffic Flows

The baseline traffic flows will be established for the Study Area. Where available, traffic count information will be taken from publicly available sources such as from DfI transport statistics data. Where unavailable, new traffic surveys will be commissioned.

If required, the traffic flow surveys would be undertaken on each link identified in the Study Area from one-week automatic traffic counts. The surveys would be undertaken during a neutral month (April, May, June, September or October) if possible, to provide a representative picture of traffic flows on each link.

Traffic growth factors can be applied to the baseline traffic flow data, DfI Roads should advise if traffic growth factors should be applied between the year of collection to the proposed year of construction.

Other baseline conditions within the Study Area will be established, including the following:

- Baseline road geometry from online mapping and Ordnance Survey Northern Ireland (OSNI) mapping, where required to inform the assessment of the capacity and suitability of the road for anticipated construction traffic;
- Road traffic collision (RTC) data collected from publicly available records. This data will be reviewed for RTCs which occurred within the Study Area within the last five full years of data; and
- Qualitative assessments of route(s) including identification of major junctions, crossing points and road width/classification.

#### 11.2.3.3. Proposed Development Traffic Volume

An estimation of the construction traffic expected for each decommissioning/construction activity will be established. This estimate will be developed by quantifying the number of vehicle deliveries for each activity during the decommissioning/construction phase. This traffic will be distributed across the predicted decommissioning/construction programme to establish the peak increase in traffic.

As per IEMA Guidance, the volume of construction traffic assessed will be reflective of the ‘realistic worst-case’ traffic and movement demand. Embedded mitigation will be considered in determining the traffic volume.

#### 11.2.3.4. Access Assessment & Abnormal Indivisible Loads

Initial access assessments (Envams, 2023 and Pell Frischmann, 2023) have indicated that the Port of Entry could be from either the Port of Larne or Belfast Harbour. Access to the Site would be taken from either the B94 (Collin Road) or Tildarg Road, which will be confirmed through the access assessment undertaken for the EIA. The impact of abnormal indivisible load (AIL) deliveries will also be subject to a standalone AIL assessment during the EIA and reported in an Abnormal Load Access Assessment report.

#### 11.2.3.5. Receptor Sensitivity

Following the establishment of the baseline conditions, sensitivity will be assigned to each link (high, medium, low, negligible). The sensitivity criteria will include:

- Severance of communities;
- Vehicle delay;
- Non-motorised user delay;
- Non-motorised user amenity;
- Fear and intimidation; and
- Safety.

Sensitivity will not be assigned to hazardous or large loads. The impact of AIL deliveries will be subject to a standalone assessment during the EIA and reported in a Abnormal Load Access Assessment.

#### 11.2.3.6. Traffic Impact Assessment

An initial screening exercise will be undertaken to evaluate which links within the traffic Study Area will be carried forward for further assessment. Links will be carried forward if:

- Traffic is predicted to increase by more than 30%, or heavy goods vehicles (HGVs) by more than 30%; or
- On routes identified as high sensitivity, where traffic is predicted to increase by more than 10% or HGVs by more than 10%.

For links which exceed these thresholds, further assessment will then be undertaken to establish the significance of the effect at each link. The effects considered for each link will be:

- Severance of communities;
- Non-motorised user delay;
- Non-motorised amenity; and
- Fear and intimidation on and by road users.

Irrespective of the initial screening assessment, road vehicle driver and passenger delays and road user and pedestrian safety will also be included in the assessment. The ‘collision cluster’ approach to assessing road safety will identify any trends or ‘clusters’ in RTC data on the links in the Study Area and will consider the potential for adverse effects on safety as a result of the proposed Development. Additionally, engineering judgement will be used to assess the suitability of existing road geometry for HGVs and AILs and this will inform the assessment in relation to safety.

The criteria adopted and assumptions made will be defined in the assessment but will broadly be a function:

- The value of the resource (i.e. its international, national, regional and local importance);
- The magnitude of the impact;
- The duration of impact;
- The reversibility of effects; and
- The number and sensitivity of receptors.

The determination of the magnitude of the impacts is undertaken by reviewing the proposed Development, establishing the parameters of the additional road traffic that may cause an impact, and quantifying these impacts. In establishing the magnitude of impact there is a need for interpretation and judgement on the part of the assessing engineer.

The assessment will consider embedded mitigation and propose additional mitigation measures where considered necessary to reduce potential impacts identified. Finally, once additional mitigation measures have been considered, an assessment of residual effects will be undertaken and a statement of residual significance made.

#### 11.2.3.6.1. Cumulative Traffic

A cumulative assessment will be undertaken which seeks to establish the possible traffic flow increase as a result of other developments which share the same links as the proposed Development during the decommissioning/construction phase. Where possible, traffic data for the cumulative developments will be established from publicly available information.

Following the above steps, an assessment of the significance of predicted cumulative traffic will be made. Where significant effects have been identified, mitigation measures in relation to those effects will be proposed.

The AIL assessment will consider the full AIL route from the assumed port of delivery to the site entrance for the transportation of wind turbine components and large electrical infrastructure.

### 11.2.4. Questions

- Do the consultees agree that the IEMA (2023) Guidance is appropriate to adopt for the traffic impact assessment?
- Do the consultees agree that the study area and methodology is appropriate?
- Can DfI Roads advise if traffic growth factor should be applied to baseline traffic flow data between the year of collection and the year of commencement of construction, and if so how such factors should be derived?
- Do the consultees agree that it is appropriate to scope out the operational and future decommissioning phases of the proposed Development?
- Do the consultees agree with the adoption of ‘collision cluster’ approach to the assessment of road safety?
- Do the consultees agree that quantification of junction delays is not required?

## 11.3. Telecommunications and Utilities

Windfarms have the potential to interfere with electro-magnetic signals passing above ground and physically with infrastructure below ground. This can therefore potentially affect television reception, fixed telecommunication links and other utilities.

During the feasibility study in 2023 (Envams, June 2023), consultation was undertaken with the following telecommunication and utility operators to identify any constraints to development:

- Arquiva;
- Northern Ireland Water;
- BT;
- Joint Radio Company; and
- Police Service Northen Ireland.

All operators responded and identified no links with the potential to represent constraints.

At the time of writing, a further consultation request had been submitted via M&EABC to NIE. The aim of this consultation is to solicit early feedback on potential effects of the proposed Development on electrical interests, in particular, the overhead electricity power lines running across the southern portion of the Site for consideration in the proposed development layout design as required. No detailed assessment during the EIA is therefore envisaged and scoped out.

# 12. Other Considerations

This chapter outlines a number of other considerations that need to be taken into account during the EIA, either to inform potential constraints to design evolution or the impact assessments. The considerations outlined are: shadow flicker, climate change, socio-economics and tourism and aviation and radar.

## 12.1. Shadow Flicker

Shadow flicker is a visual effect that occurs when sunlight passes through the rotating blades of a wind turbine, creating a flickering or strobe-like pattern of light and shadow. M&EABC LDP 2030 requires a shadow flicker assessment "*for properties within 500 meters and that lie 130 degrees either side of north of a turbine"*. Careful consideration of shadow flicker is therefore essential during the layout design and is scoped into the EIA. During feasibility (Evams Ltd, 2023), a 750m buffer was placed on residential properties in proximity of the proposed Development repower turbine locations (**Figure 2.1**). A shadow flicker assessment during the EIA is therefore scoped out.

### 12.1.1. Questions

- Do the consultees agree that shadow flicker assessment is not required if the proposed repower turbines are further than "*500 meters"* from a residential property and any residential properties surrounding the Site "*lie 130 degrees either side of north of a turbine"?*

## 12.2. Climate Change

### 12.2.1. Climate Change & Extreme Weather

Repowering the existing operational Elliots Hill and Wolf Bog Windfarms will enable further support to Northern Ireland in meeting its targets for carbon reduction, through the production of low carbon renewable energy and a corresponding net reduction in carbon emissions in comparison to more carbon intensive generation sources.

The vulnerability of the proposed Development to climate change and extreme climate events will be considered within the engineering design. UK Climate Projections, which is a set of tools and data that shows how the UK climate may change in the future, will be used to ensure that appropriate mitigation measures are embedded within the design. The layout design evolution and alternatives considered will be reported within the introductory chapters of the ES.

#### 12.2.1.1. Questions to consultees

- Do the consultees agree with the approach that climate change and extreme weather would be integral to the design evolution of the proposed Development and detailed impact assessment not required?

### 12.2.2. Carbon Balance

A carbon balance assessment employs the Scottish Government's Carbon Calculator Tool (Scottish Government, 2022) and quantifies the $CO_2$ emissions savings over the life of the proposed Development against the release of $CO_2$ from other energy generation methods. It also reports on the time it takes to pay back any carbon debt and the potential effects of the proposed Development on climate change in terms of carbon savings produced.

A carbon balance assessment will be produced to give an indication of the proposed Development's impact on the existing peat onsite and to assess the potential effects in terms of carbon dioxide ($CO_2$) emissions against the total potential carbon savings attributed to the proposed Development. The assessment will quantify the gains over the life of the project against the release of $CO_2$ during decommissioning/construction, including loss of any peat bog and construction of roads/tracks and other infrastructure. The latest version of the Carbon Calculator Tool that is available before the ES is submitted will be used.

#### 12.2.2.1. Questions to consultees

- Do the consultees agree with the approach to considering carbon balance during the EIA?

## 12.3. Socio-Economic & Tourism

### 12.3.1. Introduction

Socio-economic and tourism assessment of onshore windfarms over the last decade have found no adverse effects assessed as significant in terms of the EIA Regulations and there is no reason to expect significant effects for the proposed Development. It is also not expected that any beneficial socio-economic effects identified would be considered significant in EIA terms. It is therefore proposed to scope socio-economics and tourism out of the EIA and ES.

Nevertheless, it is recognised that socio-economic and tourism issues will be of interest to stakeholders and local authorities and so a separate study and report on socio-economics and tourism will be undertaken and submitted with the planning application. The separate report will highlight the process through which the socio-economic benefits of the proposed Development will be maximised, rather than an assessment based on the worst-case scenario. As socio-

economic and tourism effects are planning policy considerations, they will also used to inform the planning application assessment.

This section describes what will be considered in the socio-economic and tourism report and the approach that will be taken.

### 12.3.2. Baseline and Key Sensitivities

The Study Areas of the assessment will be selected to meet the interests of the key stakeholders and will be made of pre-defined administrative geographies. The proposed Development boundary lies exclusively within the M&EABC area.

The baseline assessment will include a description of the current socio-economic and tourism baseline within the local area. This will include a summary of the economic performance data and a description of the relevant tourism assets that will be covered in the assessment.

The baseline description and economic impacts will cover and compare the following Study Areas:

- Mid and East Antrim; and
- Northern Ireland.
- Tourism and recreation receptors will be identified within 15 km of the proposed Development.

The socio-economic and tourism impact report will consider in detail the baseline characteristics that will inform the assessment of any impacts of the proposed Development. Mid and East Antrim has a total population of approximately 139,200, which accounts for 7% of the total population in Northern Ireland. Many of the economic indicators for the county are broadly in line with the average for Northern Ireland as a whole. In particular:

- The median earnings of those who live in the county is £29,765 per annum, which is equivalent to 98% of the average for Northern Ireland;
- 40% of the population have the equivalent of National Vocation Qualification (NVQ) Level 4 and above qualifications, which is the same as the average for Northern Ireland; and
- The construction sector accounts for 13% of the workforce in the county, whereas across Northern Ireland it accounts for 14%.

There are, however, some key differences and areas in which the area deviates from the average of Northern Ireland. In particular, a greater proportion of the population (81%) is economically active in the county, compared to 75% across Northern Ireland.

### 12.3.3. Potential Effects Assessment

It is anticipated that the contents of the report will include:

- Introduction;
- Economic development and tourism strategic context;
- Baseline socio-economic context;
- Baseline tourism and recreation context;
- Maximising socio-economic benefits;
- Socio-economic assessment;

- Tourism and recreation impact assessment; and
- Summary of findings and conclusion.

This will primarily be a desk-based study with consultation undertaken with the local community to further inform the baseline and inform any opportunities from the proposed Development which arise therein.

The assessment of socio-economic impacts will focus on the level of activity/employment supported during the decommissioning/construction and operation phases. Government and industry reports will be used to determine the expected capital and operational expenditure associated with the proposed Development, as well as the breakdown of expenditure by different contracts (e.g. turbine, balance of plant). An assumption will then be made based on the share of each type of contract that can be secured regionally and nationally. This increase in turnover will then be used to estimate the economic impact associated with the proposed Development.

In order to assess effects on tourism and recreation, the features that make the local area distinctive and attractive will be identified and the potential impact of the proposed Development on those key features will then be assessed.

### 12.3.4. Questions to consultees

- Do the consultees agree with the approach of scoping socio-economics out of the EIA and into a standalone report?
- Do the consultees agree that the scope of the proposed socio-economic assessment is appropriate?
- Are there specific socio-economic effects that should be considered in the standalone report?

## 12.4. Aviation and Radar

The operation of wind turbines has the potential to cause a variety of adverse effects on aviation. These include: physical obstructions, the generation of unwanted returns on primary surveillance radar (PSR) and adverse effects on the overall performance of communications, navigation and surveillance (CNS) equipment.

The Site is c.18 km from Belfast International Airport; c.25 km from Belfast City Airport; and c.75 km from City of Derry Airport. While aviation is not formally classified as an environmental topic under the EIA Regulations, the proximity of nearby airports and the scale of the proposed new turbines necessitate careful consideration of potential impacts on aviation and radar systems throughout the design evolution of the proposed Development.

At the time of writing, a consultation request had been submitted via M&EABC to the aviation authorities of Northern Ireland. The aim of this consultation is to solicit early feedback on potential effects of the proposed Development on aviation and radar interests to incorporate into the design. Preliminary responses have been received from Belfast International Airport, Defence Infrastructure Organisation and NATs Safeguarding Office and consultation and studies will continue during the design evolution and EIA.

Any aviation and radar considerations and findings of consultation undertaken will be documented within the design evolution/consideration of alternatives section of the ES and any associated technical assessments undertaken would be included in an ES appendix or as a separate document within the planning application pack as required.

It is likely that the proposed Development would include aviation warning lighting in accordance with regulatory requirements and the aviation authorities. Potential effects of aviation lighting on nearby receptors is considered within the landscape and visual Chapter (**Chapter 8**) of this Scoping Report.

### 12.4.1. Questions to consultees

- Do the consultees agree with the approach to considering aviation and radar during the EIA?

## 12.5. Major Accidents & Disasters

The Proposed Development is not located in an area with a history of natural disasters. The decommissioning of the existing windfarms and construction and operation of the repower would be managed within the requirements of a number of health and safety related regulations. A peat slide risk assessment would be undertaken to inform the engineering design (**Chapter 7**) and environmental management plans would be in place, therefore no likely significant effects in terms of major accidents or disasters are identified and detailed assessment scoped out for further assessment.

### 12.5.1. Questions to consultees

- Do the consultees agree to scope out major accidents and disasters?

## 12.6. Human Health

The topics addressed in this scoping report inherently include an evaluation of potential significant risks to human health arising from the proposed Development. For example: water quality, hydrogeology, erosion and sediment transport (**Chapter 7**); visual effects (**Chapter 8**); noise (**Chapter 10**); traffic (**Chapter 11**); air quality (**Chapter 11**) shadow flicker, radar, tourism (**Chapter 12**). Furthermore, all phases of the proposed Development (decommissioning, construction, operation) would follow prevailing health and safety at work requirements, emergency procedures and best practice. The repowering windfarm design would also include avoidance measures to shadow flicker effects (**Chapter 12**), ice throw and lightning strike. A standalone human heath impact assessment is therefore scoped out of the future ES.

### 12.6.1. Questions to consultees

- Do the consultees agree to scope out a standalone detailed human health impact assessment in the ES?

# 13. Environmental Statement Structure

The overall approach and findings of the EIA undertaken on the proposed Development will be reported in an ES. The ES will accompany the planning application for the proposed Development to the Planning Authority to aid their decision-making process. It will also be shared with stakeholders and the public as part of the planning process.

The EIA Regulations state that:

*"(2) An environmental statement is a statement which includes at least—*

*(a) a description of the proposed development comprising information on the site, design, size and other relevant features of the development;*

*(b) a description of the likely significant effects of the proposed development on the environment;*

*(c) a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*

*(d) a description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the significant effects of the development on the environment;*

*(e) a non-technical summary of the information referred to in sub-paragraphs (a) to (d); and*

*(f) any information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected"*

The outline structure of the ES will likely be:

- Non-Technical Summary;
- Chapter 1: Introduction;
- Chapter 2: Design Evolution and Alternatives;
- Chapter 3: Proposed Development;
- Chapter 4: Ecology (excluding ornithology);
- Chapter 5: Ornithology;
- Chapter 6: Geology, Hydrology, Hydrogeology and Peat;
- Chapter 7: Landscape and Visual Amenity;
- Chapter 8: Cultural Heritage and Archaeology;
- Chapter 9: Access, Traffic & Transport;
- Chapter 10: Noise and Vibration;
- Chapter 11: Schedule of Mitigation;
- Supporting Figures; and
- Appendices.

It is proposed to keep the content of the main ES technical chapters concise while the associated methods, baseline data, technical assessments are included as appendices.

# 14. Summary

This report has been prepared on behalf of the Applicant by Natural Power, with specialist input from JUNO Planning and Environmental (policy); Avian Ecology (ornithology); Hoare Lea (acoustics); Gahan and Long (archaeology and cultural heritage); and BiGGAR Economics (socio-economics and tourism). It sets out the details of initial scoping undertaken as part of the EIA for repowering the Applicant's existing operational Elliots Hill and Wolf Bog Windfarms in County Antrim.

The Applicant seeks to use this report to request a Scoping Opinion from the Planning Authority. For each environmental discipline or topic area, questions have been provided to aid the Planning Authority in their review and response. The questions focus on the methodologies, baseline data and likely impacts caused by the development. Information has been provided on the proposed Development and the known environmental receptors. Where features or receptors are deemed to have a possible significant effect the methodologies to further assess potentials effects have been provided for comment. Responses on these would help ensure that the detailed methodology, survey and assessments are carried out with consideration to all statutory consultees and key stakeholders.

# References

A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, Institute of Acoustics: M. Cand, R. Davis, C. Jordan, M. Hayes, R. Perkins: 2013

Assessing the Cumulative Landscape and Visual Impact of Onshore Wind Energy Developments: NatureScot: 2021: Available at: *https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments* [Accessed in April 2025]

Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition): The Bat Conservation Trust, London: Collins, J. (ed.) (2023)

Carbon Calculator Tool: The Scottish Government: 2008 Available at *Carbon Calculator Tool (sepa.org.uk)*

Code of practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise & Part:2: Vibration: BS 5228-1&2:2009+A:2014: British Standards Institute: 2014

Department of Agriculture, Environment and Rural Affairs Open Data – Abstraction Licensing: Department of Agriculture, Environment and Rural Affairs: July 2023. Available at: *https://opendata-daerani.hub.arcgis.com/datasets/abstraction-licensing/about* [Accessed in April 2025] (DAERA, July 2023)

Department of Agriculture, Environment and Rural Affairs. Antrim Hills SPA Conservation Objectives: DAERA 2015. Available at: *https://www.daera-ni.gov.uk/sites/default/files/publications/doe/antrim-hills-spa-conservation-objectives-2015.pdf* [Accessed April 2025] (DAERA 2015)

Department of Agriculture, Environment and Rural Affairs. Belfast Lough Literature. DAERA 2015. Available at: *https://www.daera-ni.gov.uk/sites/default/files/publications/daera/Belfast%20Lough%20Literature.pdf* [Accessed April 2025] (DAERA, 2015)

Department of Agriculture, Environment and Rural Affairs. Belfast Lough Open Water SPA Citation Document and Map. DAERA, 2015. Available at: *https://www.daera-ni.gov.uk/sites/default/files/publications/doe/Belfast%20Lough%20Open%20Water%20SPA%20Citation%20document%20and%20map.pdf* [Accessed April 2025] (DAERA, 2015)

Department of Agriculture, Environment and Rural Affairs. Belfast Lough SPA Conservation Objectives. DAERA 2015.. Available at: *https://www.daera-ni.gov.uk/sites/default/files/publications/doe/belfast-lough-spa-conservation-objectives-2015.pdf* [Accessed April 2025] (DAERA 2015).

Department of Agriculture, Environment and Rural Affairs. Garron Plateau ASSI Citation and VAM. DAERA. Available at: *https://www.daera-ni.gov.uk/sites/default/files/publications/doe/Garron%20Plateau%20ASSI%20Citation%20and%20VAM.pdf* [Accessed: April 2025] (DAERA, 2015)

Department of Agriculture, Environment and Rural Affairs. Larne Lough ASSI Citation Documents and Map. DAERA, 2015. Available at: *https://www.daera-ni.gov.uk/sites/default/files/publications/doe/Larne-Lough-ASSI-citation-documents-and-map.pdf* [Accessed: April 2025] (DAERA, 2015)

Department of Agriculture, Environment and Rural Affairs. Lough Neagh and Lough Beg SPA Conservation Objectives. DAERA 2015. Available at: *https://www.daera-*

ni.gov.uk/sites/default/files/publications/doe/lough-neagh-lough-beg-spa-conservation-objectives-2015.pdf [Accessed April 2025] (DAERA 2015)

Department of Agriculture, Environment and Rural Affairs. Outer Belfast Lough ASSI Citation Documents and Map. DAERA, 2015. Available at: https://www.daera-ni.gov.uk/sites/default/files/publications/doe/Outer-Belfast-Lough-ASSI-citation-documents-and-map.pdf [Accessed: 30 April 2025] (DAERA, 2015)

Department for Communities. Northern Ireland Sites and Monuments Record Online Interactive Database. Available at: Sites and Monuments Record | Department for Communities [Accessed in April 2025]

Department for Communities. Northern Ireland List of Northern Ireland Priority Species 2023. Available at: https://www.daera-ni.gov.uk/publications/list-northern-ireland-priority-species-2023 [Accessed in April 2025]

Design Manual for Roads and Bridges, LA 111 Noise and Vibration, Revision 2: The Highways Agency, Transport Scotland, Transport Wales and The Department for Regional Development (Northern Ireland): 2020

Elliot's Hill and Wolf Bog Wind Farm. Abnormal Indivisible Load Route Survey: 107746: (Pell Frischmann: May 2023)

Elliots Hill and Wind Bog Windfarm Repowering Breeding Season Ornithology Survey Report 2023. (Avian Ecology, 2023)

Elliot's Hill and Wolf Bog Renewable Energy Development. Feasibility Report: (Envams Ltd: June 2023)

Elliots Hill and Wind Bog Windfarm Repowering Non-Breeding Season Ornithology Survey Report 2024-25. (Avian Ecology,2025)

Institute of Environmental Management and Assessment (IEMA) Guidelines, Environmental Assessment of Traffic and Movement: (IEMA: July 2023)

General Soil Map (1: 575,000 Scale) (Second Edition): National Soil Survey (a forerunner organisation to Teagasc – the Agriculture and Food Development Authority): 1980. Available at: https://www.teagasc.ie/media/website/environment/soil/General-Map.pdf [Accessed in April 2025]

GSNI GeoIndex: Geological Survey Northern Ireland: (GSNI). 2025. Available at: GSNI - British Geological Survey [Accessed in April 2025] (GSNI, 2025)

HadUK-Grid: Met Office. Available at: HadUK-Grid - Met Office [Accessed in April 2025] (Met Office, 2025)

Handbook for Phase 1 habitat survey: a technique for environmental audit: JNCC, Peterborough: 2010

Joint Nature Conservation Committee. JNCC, 1998. Information Sheet on Ramsar Wetlands (RIS): Belfast Lough. JNCC. Available at: https://jncc.gov.uk/jncc-assets/RIS/UK12002.pdf [Accessed 29 April 2025] (JNCC, 1998)

Joint Nature Conservation Committee. Information Sheet on Ramsar Wetlands (RIS): Lough Neagh and Lough Beg. JNCC 2005. Available at: https://rsis.ramsar.org/RISapp/files/RISrep/GB74RIS.pdf [Accessed 29 April 2025] (JNCC, 2005)

Joint Nature Conservation Committee. Information Sheet on Ramsar Wetlands (RIS): Larne Lough. JNCC 2005. Available at: https://rsis.ramsar.org/RISapp/files/RISrep/GB895RIS.pdf. Available at: *https://rsis.ramsar.org/RISapp/files/RISrep/GB74RIS.pdf* [Accessed 29 April 2025] (JNCC, 2005)

Local Development Plan 2030, Plan Strategy: Mid & East Antrim Borough Council. Available at: *Local Development Plan | Mid and East Antrim Borough Council* [Accessed in April 2025] (LSP-PS)

Monitoring the Otter Lutra lutra. Conserving Natura 2000 Rivers: Monitoring Series No. 10: English Nature, Peterborough Chanin, P.: 2003. (English Nature, 2003)

National Biodiversity Network Atlas. Available at: *https://nbnatlas.org/* (NBN Atlas)

Natural Environment Division - Guidance on Bat Surveys, Assessment and Mitigation for Onshore Wind Turbine Developments in Northern Ireland: (NIEA: 2024)

Natural Heritage, Development Management Team Advice Note Active Peatland and PPS18: NIEA 2012

NIEA Natural Environment Map Viewer: Department of Agriculture, Environment and Rural Affairs: Available at: *https://gisdaera-ni.gov.uk* [Accessed in April 2025]

NIEA Catchment Data Map Viewer: Department of Agriculture, Environment and Rural Affairs: 2025. Available at: *NIEA Catchment Data Map Viewer* [Accessed in April 2025]

Northern Ireland Environment Agency Natural Environment Map Viewer – Available at: *https://gis.daera-ni.gov.uk/arcgis/apps/webappviewer/index.html?id=bb721449cb8949e7a4f90c722bd2d80b* (NIEA Map Viewer)

Northern Ireland Flood Risk Management Plan 2021–2027: Department for Infrastructure: . 2021. 5 Available at: *Second Cycle Northern Ireland Flood Risk Management Plan 2021-2027* [Accessed in April 2025]

Northern Ireland's Groundwater Environment. Paul Wilson, Brighid Ó Dochartaigh, Mark Cooper and Rebecca Ní Chonchubhair: Crown. 2023. Available at: *Northern Ireland's Groundwater Environment* [Accessed in April 2025]

NVC Users' Handbook: JNCC, Peterborough, ISBN 978 1 86107 574 1: Rodwell, J.S.: 2006

Planning Policy Statement 18: Renewable Energy, and associated Best Practice Guide (PPS18): Department of the Environment: August 2009

Proposed Wind Farm, Wolf Bog, Tildarg, Kells, Co. Antrim. Volume 1 Environmental Statement. B9 Energy and RES, April 2004

Raptors: a field guide for surveys and monitoring. 3rd edn. The Stationery Office. (Hardey, J., Crick, H.Q.P., Wernham, C.V., Riley, H., Etheridge, B. & Thompson, D.B.A, 2013)

Rivers Defined Under the Water Framework Directive: Azimap website: Available at *https://www.azimap.com/explore/view/13/rivers-defined-under-the-water-framework-directive* [Accessed in April 2025]

Strategic Planning Policy Statement for Northern Ireland: Planning for Sustainable Development. (Department for Infrastructure, 2015). Available at: *https://www.infrastructure-ni.gov.uk/publications/strategic-planning-policy-statement* [Accessed 30 April 2025].

Surveying Badgers: The Mammal Society, London. Harris, S. Cresswell, P & Jefferies, D.: 1989

The Assessment and Rating of Noise from Windfarms, Final Report for the Department of Trade & Industry: ETSU-R-97: The Working Group on Noise from Wind Turbines: 1996

The Control of Noise (Codes of Practice for Construction and open Sites) Order (Northern Ireland) (CNO): The Department of Environment: November 2002

The Measurement of Low Frequency Noise at Three UK Wind Farms, W/45/00656/00/00: Department of Environment, Food & Rural Affairs: 2003

UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation: Mammal Society, Southampton Cresswell, W. J., Birks, J. D. S., Dean, M., Pacheco, M., Trewhella, W. J., Wells, D. & Wray, S. (eds): 2012

UK Climate Projections (UKCP): Met Office: 2025: Available at: *UK Climate Projections (UKCP) - Met Office* [Accessed in April 2025]

UK Habitat Classification Version 2.0. Available at: *https://www.ukhab.org.* (UKHab Ltd, 2023)

Wolf Bog, Tildarg, Kells, Co. Antrim, Proposed Wind Farm, Environmental Statement: B9 Energy Services Ltd / Renewable Energy Systems Ltd: April 2004

# Figures